UNDERSTANDING AND DESIGNING FOR INTERACTIONAL PRIVACY NEEDS WITHIN SOCIAL NETWORKING SITES

by

Pamela J. Wisniewski

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Approved by:

_____
Dr. Heather Lipford

_____
Dr. David C. Wilson

_____
Dr. Anita Blanchard

_____
Dr. Cliff Lampe

_____
Dr. Celine Latulipe

ABSTRACT

PAMELA J. WISNIEWSKI. Understanding and designing for interactional privacy needs within social networking sites. (Under direction of DRS. HEATHER LIPFORD AND DAVID C. WILSON)

"Interpersonal boundary regulation" is a way to optimize social interactions when sharing and connecting through Social Networking Sites (SNSs). The theoretical foundation of much of my research comes from Altman's work on privacy management in the physical world. Altman believed that "we should attempt to design responsive environments, which permit easy alternation between a state of separateness and a state of togetherness" (1975). In contrast, Mark Zuckerberg, Facebook's CEO, claims that sharing is the new "social norm" for Facebook's 800 million users (Facebook 2011), and it is Facebook's job to enable "frictionless sharing" (Matyszczyk 2010). My research focuses on reconciling this rift between social media sharing and privacy by examining interpersonal boundary regulation within SNSs as a means to align privacy needs with social networking goals.

To do this, I performed an in-depth feature-oriented domain analysis (Kang, Cohen et al. 1990) across five popular SNS interfaces and 21 SNS user interviews to understand boundary mechanisms unique to these environments and their associated challenges. From this, I created a taxonomy of different interpersonal boundaries users manage within their SNSs, identified interface features that directly supported these boundary mechanisms, and uncovered coping behaviors for when interface features were inadequate or inappropriately leveraged. By better understanding this dynamic, we can begin to build new interfaces to help support and possibly even correct some of the

maladaptive social behaviors exhibited within SNSs. Finally, I conducted two empirical studies that quantitatively validated some of the relationships in my theoretical model of the interpersonal boundary regulation process within SNSs. Specifically, I examined the role of risk awareness, feature awareness, burden, and desired privacy level on SNS privacy behaviors. I also examined the relationship between privacy outcomes and SNS goals of connecting and sharing with others. Through this research, I show that boundary regulation allows SNS users to reap the benefits of social networking while simultaneously protecting their privacy.

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CHAPTER 1: SOCIAL NETWORKING SITES, A NEW SOCIAL ORDER

1.1 Introduction

Social Networking Sites (SNSs) build social capital, the intrinsic value of participating in social exchanges, through emotional support, access to new information and people, camaraderie, a sense of social identity, and more (Ellison, Steinfield et al. 2007; Burke, Marlow et al. 2010; Ellison, Steinfield et al. 2010). According to Neilson Media, Americans spend over a quarter of their time online engaged in social networking activities (2010). Facebook, the most popular SNS, has over 800 million users worldwide (Facebook 2011). Indeed, SNSs are embedded in our everyday lives and changing the way in which we connect with others. For instance, Facebook's CEO, Mark Zuckerberg, declared that privacy is no longer the social norm:

> "People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time. We view it as our role in the system [Facebook] to constantly be innovating and updating what our system is to reflect what the social norms are" (Matyszczyk 2010).

However, not everyone agrees that unbounded sharing is the key to building plentiful and meaningful interpersonal relationships through SNSs. SNS friendship has been called "brief and tangential," characterized with "ambient intimacy" (Hesse 2010). In other words, we are surrounded indirectly by "friends," but we lack true connection. Comedian Jimmy Kimmel echoed this sentiment when he declared November 17, 2010 "National Unfriend Day" (Kitchen 2010). Kimmel complained, "Friendship is a sacred thing, and I believe Facebook is cheapening it." SNS users are also starting to realize that

connection comes with a cost. Only a month after launch, Web 2.0 Suicide Machine helped SNS users to "make the switch to Web 2.0 free life" (SuicideMachine.org) and severed over 80,500 Facebook friendships (Yan 2010). Therefore, unbounded sharing does not seem to be the key to building stronger interpersonal relationships. In some cases, sharing too much can be detrimental to relationships (Petronio 2002), cause social crowding (Altman 1975), and inflict emotional harm (Altman 1975). My research explores interpersonal boundary regulation as a way to balance benefits and drawbacks that individuals experience when interacting within online social networks and ultimately improve the quality of online social interactions. I use Altman's seminal work, *The Environment and Social Behavior*, as a theoretical foundation to my research. Altman believed that privacy optimization through "interpersonal boundary regulation" is the key to maintaining appropriate levels of interaction within one's social environment. So, while Zuckerberg and Facebook are truly "making the world more open and connected" (Zuckerberg), my work leverages Altman's findings on optimizing social interactions through boundary regulation to improve the quality of how SNS users connect.

1.2 Research Overview

My research presents an in-depth examination of SNS privacy through interpersonal boundary regulation. Chapter 1 provides an overview of past research related to SNSs, privacy and boundary regulation, and combines the two in order to identify unique challenges and research questions that build upon previous findings. As such, my high-level research questions include:

1. What are different types of interpersonal privacy boundaries SNS users manage, and what strategies do they use to do so?
2. What are salient factors involved in the SNS interpersonal boundary regulation process?

3. What factors impact SNS users' interpersonal boundary negotiation behaviors?
4. What is the relationship between desirable privacy outcomes and social networking benefits for SNS users?

I address these research questions through a variety of approaches that allowed us to develop a comprehensive theoretical understanding as well as empirical validation of my theory. In Chapter 3, I combine a feature-oriented domain analysis (Kang, Cohen et al. 1990) across five different SNSs with semi-structured end user interviews to qualitatively derive ten distinct types of privacy boundaries. I discuss specific interface controls and strategies SNS users implement to manage these boundaries along with associated challenges. A pivotal finding was that SNS privacy boundaries extended beyond information disclosure to also include more nuanced types of interactional relationship management. I carried this finding throughout the subsequent studies which greatly enhanced the scope of the understanding of SNS privacy. In Chapter 4, I focused on coping strategies SNS users develop outside of the SNS interface in order to mitigate boundary regulation challenges. I found that many coping strategies are maladaptive while true boundary negotiation often happens outside of the SNS interface. In Chapter 5, I combined my research findings from Chapters 2 through 4 into a theoretical framework of interpersonal boundary regulation within SNSs. I identified common themes from the qualitative findings that I felt were salient factors contributing to the process. For instance, individual characteristics, awareness, and one's desired privacy level surfaced as contributing factors to one's boundary negotiation behaviors. I also theorized a positive relationship between more optimal privacy outcomes and social networking goals. This relationship would more closely reflect Altman's view than Zuckerberg's –

boundary regulation (as opposed to unbounded sharing) – as the key to enhance one's social interactions.

In Chapters 6 and 7, I used a web-based survey and quantitative methods to validate some of the main relationships from the theoretical framework. In Chapter 6, I examined the role of desired privacy level, self-awareness, risk awareness, feature awareness, and burden when understanding SNS users' privacy negotiation behaviors. I discuss the "Privacy Paradox," the discrepancy between privacy attitudes and privacy behaviors (Barnes 2006; Norberg, Horne et al. 2007; Utz and Krämer 2009). Although relationships varied between the constructs for each of the ten boundary types, I found a strong main effect of feature awareness on SNS users' privacy behaviors and also a significant impact of risk awareness on one's desired privacy level. My findings suggest that the relationship between one's desired privacy level and privacy behaviors is impacted by a number of other factors specific to each boundary type. In Chapter 7, I explored the relationship between privacy outcomes and social networking outcomes. While desired privacy level was often negatively associated with social capital, achieved privacy level was often positively associated with social capital. In addition, the relationship between one's privacy outcome (desired minus achieved privacy level) and social capital varied between the different privacy outcome states. For social crowding, more social interaction than desired, I often found a significant, negative relationship with social capital. For social isolation, I occasionally found a significant, positive association with social capital, which was contrary to my expectations. I also tested the relationship between privacy outcomes and self-esteem but found very little statistical

significance. Finally, in Chapter 8, I summarize the findings and present design guidelines for enhancing SNS interactional privacy.

1.3 Research Contributions

In summary, the main research contributions of this dissertation include:

- A taxonomy of SNS boundary types and associated SNS interface controls for interpersonal boundary management that expands the scope of SNS privacy to better mirror real world social interactions.
- A framework of coping mechanisms for SNS interpersonal boundary regulation that helps SNS designers pinpoint opportunities for improved interface design.
- A theoretical framework of the SNS interpersonal boundary regulation process that is the first of its kind to apply Altman's process-level model of privacy to SNS environments.
- Quantitative validation of aspects of the theoretical model which create a better understanding of SNS user privacy behaviors and the relationship between privacy and SNSs.
- Design guidelines for SNS interactional privacy that support the boundary regulation process and can serve to improve SNS user experience.

My research applies established theory regarding social behavior and environmental design, which has developed through decades of research, to a new type of social environment. I found that these theories remain extremely relevant and can serve as a framework for SNS interface design. Instead of imposing new social norms on SNS users, I encourage SNS designers to reflect real world social norms and processes when constructing online social environments as a way to improve social interactions. Yet, I also acknowledge that the differences between offline and online social interactions need to be accounted for when applying these principles. For instance, the lack of physical mechanisms such as distance and non-verbal body language lead to new challenges and the development of new behaviors for managing social interactions within SNSs.

Therefore, my research bridges the old with the new to create an in-depth understanding and viable solutions for improved social engagement through SNSs.

CHAPTER 2: PRIVACY AND SOCIAL NETWORKING SITES

In this chapter, I briefly review the general concepts of SNSs and privacy. Then, I relate the two to discuss SNS boundary challenges and existing research related to SNS privacy.

2.1 Social Networking Sites

Today, popular culture equates the term "social network" to Facebook and other SNSs synonymously. However, social network theory as a concept was developed as early as the 1920's when anthropologists, psychologists, and other social scientists desired ways to represent and examine the "fabric or web of social life" (Scott 2009). Yet, SNSs revolutionized social networks by providing an online interface so that we could visibly see social networks for the first time and remain constantly connected. SNSs are defined as having the following unique characteristics: 1) a public or semi-public profile 2) an explicit way to connect with others and 3) a means of traversing this connection-based network (boyd and Ellison 2007). Though SNSs are a form of social media popularized by Web 2.0, not all social media such as blogs, message boards, and instant messaging are considered SNSs. For instance, Google Blogger and Yahoo Groups are types of social media, but they lack the property of a connection-based network required to be classified as social networks. Examples of SNSs include Facebook, MySpace, LinkedIn, Twitter, and Google+; SNS users often hold accounts across multiple SNSs. Many SNS users are adopting the use of social integrators and

aggregators such as TweetDeck and OpenSocial that allow users to manage multiple SNS accounts through one portal (Patriquin 2007).

Around 2002 to 2003, SNS pioneers such as Friendster, MySpace, and Club Nexus (an online community at Stanford University) became a popular topic in academic research. Researchers studied the characteristics of friendship via these new media and social phenomenon such as the strength of weak ties (Adamic, Buyukkokten et al. 2003; boyd 2004; boyd 2006; Thelwall, Wilkinson et al. 2009). MySpace was the most popular SNS in 2006 but was overtaken by Facebook in 2008 (Wikipedia 2011). Therefore, Facebook studies in the recent years have dominated SNS research (Acquisti and Gross 2006; Stutzman 2006; Ellison, Steinfield et al. 2007; Mazer, Murphy et al. 2007; Tufekci 2008; Valenzuela, Park et al. 2008; Lipford, Besmer et al. 2008 ; Christofides, Muise et al. 2009; Debatin, Lovejoy et al. 2009; Valenzuela, Park et al. 2009; Barkhuus and Tashiro 2010; Frampton 2010; Nosko, Wood et al. 2010; Stutzman and Kramer-Duffield 2010; Ledbetter, Mazer et al. 2011; Park, Jin et al. 2011). SNS researchers have compared and contrasted multiple SNSs and found notable differences (Crandall, Cosley et al. 2008; Leskovec, Huttenlocher et al. 2010; Xiang, Neville et al. 2010). For instance, 94.9% of Facebook users reported using their real names while only 62.8% did so on MySpace (2008). Boyd and Ellison provide a good historical overview of SNSs and point out that while SNSs have characteristics in common, they each allow for varied technological affordances that differentiate themselves from their competitors and affect their user base (2007). SNS research methodologies have ranged from ethnography (boyd 2004) to social network analysis (SNA), which utilizes graph theory to quantitatively examine agents and the connections between them (Scott 2009). SNS research topics

have ranged from the intention and motivation to use SNSs (boyd 2004; boyd 2006; Cheung and Lee 2010; Lampe, Wash et al. 2010), nature of SNS connections (Brzozowski, Hogg et al. 2008; Kunegis, Lommatzsch et al. 2009; Leskovec, Huttenlocher et al. 2010), nuances of SNS relationships (or "friendships") (boyd 2004; boyd 2006; Zinoviev and Duong 2009), SNS user behaviors (Stutzman 2006; boyd and Ellison 2007; Lampinen, Tamminen et al. 2009; Thelwall, Wilkinson et al. 2009), and SNS outcomes – from benefits such as social capital and social well-being (Ellison, Steinfield et al. 2007; Burke, Marlow et al. 2010) to negative consequences such as privacy implications (Debatin, Lovejoy et al. 2009; Ellison, Vitak et al. 2011). For example, research has discovered a strong relationship between Facebook use and social capital and psychological well-being for college students (Ellison, Steinfield et al. 2007). In addition, SNS users who used enhanced privacy settings also reported higher levels of social capital (Ellison, Vitak et al. 2011). Therefore, privacy may be a key factor in balancing the benefits and tradeoffs when participating in online social networking.

2.2 Privacy and Boundaries

Altman defines privacy as, "an interpersonal boundary process by which a person or group regulates interaction with others," by altering the degree of openness of the self to others (Altman 1975). Boundary regulation is an interactive process where two individuals or more collaborate in order to negotiate an acceptable level of social interaction (Altman 1975; Petronio 2002); the process is dialectic in nature, balancing both the restriction and seeking of social interaction with others. The boundary regulation process allows for feedback and readjustment along with a dynamic need for varying levels of separateness and togetherness. Boundary mechanisms are behaviors employed

in combination and adjusted over time to achieve one's desired level of privacy. Individuals have different mechanisms for erecting boundaries, and they adjust these mechanisms as their needs change. Interpersonal boundaries are important because they help us define self, give us protection (physically and emotionally), help us manage our personal resources, and forge deeper relationships (Altman 1975; Petronio 2002). "Healthy boundaries protect without isolating, contain without imprisoning, and preserve identity while permitting external connections" (Katherine 1991).

2.3 SNS Boundary Challenges

"One of the most obvious issues emerging from the impact of social network site use is the challenge of drawing boundary lines that denote where relationships begin and end," noted Child and Petronio (2010). Past research has identified three potential threats to interpersonal boundary regulation that arise out of the unique nature of SNSs (Tufekci 2008). First, the threat to spatial boundaries occurs because our audiences are obscured so that we no longer have a good sense of whom we may be interacting with. Second, temporal boundaries are blurred because any interaction may now occur asynchronously at some time in the future due to the virtual persistence of data. Third, multiple interpersonal spaces are merging and overlapping in a way that has caused a "steady erosion of clearly situated action" (Grudin 2001). Since each space may have different and, at times, mutually exclusive behavioral requirements, acting accordingly within those spaces has become more of a challenge (Tufekci 2008). Along with these problems, a major interpersonal boundary regulation challenge is that SNS environments often take control of boundary regulation from the end users. For instance, Facebook introduced its "News Feed" in September 2006; this was the first time that the content and interactions

an individual contributed to Facebook was broadcasted to all of his or her friends (Ellison, Vitak et al. 2011). Since then, Facebook continues to modify the presentation of one's News Feed and Wall (now Timeline); Facebook users struggle to keep up-to-date on how to manage interactions within these spaces as Facebook, not the end user, controls who and what is shared with others.

Technology aside, boundary regulation is a difficult process for any of us to master. The interpersonal boundary development process within SNSs is even less understood as we are just now developing social norms that shape our online interactions with others. Virtually, SNSs are an unparalleled, new social order that have redefined "normal" practices and behaviors for relating with others. Evidence suggests that interpersonal boundary regulation within SNSs is a problem that has and will continue to cause negative consequences for SNS users. Therefore, interpersonal boundary regulation within SNSs needs to be more deeply understood so that these negative consequences can be mitigated to maximize the benefits reaped from online social networking.

2.4 SNS Privacy

Altman's work on boundary regulation has been used to frame research in privacy in social media in the past (Tufekci 2008; Stutzman and Hartzog 2009; Lampinen, Lehtinen et al. 2011). However, privacy within the SNS research community is often defined as "the ability of individuals to control when, to what extent, and how information about the self is communicated to others" (Ellison, Vitak et al. 2011). Therefore, SNS privacy research reframes privacy as a means to limit information disclosure, increase control, and perpetuate social withdrawal (Tufekci 2008; Xu, Dinev

et al. 2008). This definition has moved away from Altman's conceptualization of privacy as an "interpersonal event" enmeshed in relationships for optimally regulating one's social interactions (Altman 1975). As a result, SNS privacy goals are often characterized as diametrically opposed to goals of sharing and connecting via SNSs. In addition, the definition of privacy is further narrowed specifically to a means to regulate private versus public disclosures (Lampinen, Lehtinen et al. 2011). This conceptualization comes most readily from Petronio's well known Communication Privacy Management (CPM) theory, an extension of Altman's work specifically dealing with private disclosures (Altman 1975; Petronio 2002).

To highlight some of the work that has focused on SNS privacy from an information sharing perspective, Child and Agyeman-Budu applied Petronio's CPM to blogging disclosures made by young adults on websites such as MySpace, Facebook, and LiveJounal (2010). They found that high self-monitoring bloggers displayed more privacy oriented management practices than bloggers who were low self-monitors but high self-monitors tended to blog more often. They also found support that individuals with higher Concern for Appropriateness (CFA) had more permeable privacy boundaries so they disclosed in more detail and with higher frequency than bloggers with low CFA (Child and Agyeman-Budu 2010). Tufekci examined disclosure mechanisms used by college students on MySpace and Facebook to manage the boundary between private and public. Findings suggest that students are more likely to adjust profile visibility rather than limiting their disclosure (Tufekci 2008). Stutzman examined the creation of multiple profiles on social media websites, primarily Facebook, as an information regulation mechanism. Through grounded-theory, he identified three types of boundary regulation

within this context (pseudonymity, practical obscurity, and transparent separations) and four over-arching motives for these mechanisms (privacy, identity, utility, and propriety) (Stutzman and Hartzog 2009). Lampinen et al. created a framework of strategies for managing private versus public disclosures. It defined three dimensions by which strategies differed: behavioral vs. mental, individual vs. collaborative, and preventative vs. corrective (Lampinen, Lehtinen et al. 2011). Xu et al. developed their "Information Boundary Theory" by studying privacy attitudes on information disclosure across e-commerce, finance, healthcare, and social networking web sites. They found that privacy intrusion, risk, and control were all important factors related to privacy concerns in the context of social networking (Xu, Dinev et al. 2008). Other information privacy models have been developed such as the Concern for Information Privacy (CFIP) and Internet User Information Privacy Concerns (IUIPC) models, but, again a commonality among SNS privacy research, the focus has been on information privacy (Xu, Dinev et al. 2008).

2.5 Research Extensions

My research hearkens back to Altman's definition of privacy, broadening the scope of this research in two ways. First, the nature of interpersonal boundary regulation is dialectical where individuals open and close their boundaries to achieve their desired level of privacy (Altman 1975). In this way, privacy is an optimization process for desired levels of social interaction instead of a means of social withdrawal. Second, true to Altman's definition of privacy as regulating "of openness of the self to others," we acknowledge that access to "self" can include more complex social interactions with others, as opposed to just "information about one's self." My research frames SNS privacy as both informational and interactional. It makes sense that early computer-

mediated communications research focused less on interactions and more on information because little end user "interaction" actually occurred. Now, as we lean heavily towards Web 2.0 technologies such as SNSs, social interactions and collaboration between users is encouraged and facilitated (Maia, Almeida et al. 2008), in a way we have never seen before. Therefore, my conceptualization of SNS privacy reflects that both information exchanges and social interactions occur within SNSs. These conceptual distinctions strongly influence my research lens for all of my studies. Specifically, in Chapter 3, I create a taxonomy of the different types of privacy boundaries and associated boundary mechanisms available for privacy regulation. While information disclosure boundaries represent one of the five main categories in the framework, other types of privacy boundaries also emerged.

CHAPTER 3: A TAXOMONY OF BOUNDARY TYPES AND MECHANISMS FOR SNS PRIVACY MANAGEMENT

As noted in Chapter 2, boundary mechanisms are behaviors employed to achieve one's desired level of privacy. The primary mechanisms of interpersonal control used to negotiate boundaries in Altman's privacy model were, for instance, personal space, territory, verbal behavior, and nonverbal behavior. As an example, personal space is the immediate area surrounding an individual and this boundary could be maintained through the use of physical distance. Nonverbal behaviors would include eye contact, clothing choice, and body language. Similarly, individuals can erect physical boundaries in the form of geographically owned territories. All of these mechanisms together serve to regulate one's social interactions with others and different levels of privacy can be achieved through different behavioral mechanisms (Altman 1975). To achieve our optimal level of desired interaction with others, we readjust our arsenal of boundary regulation mechanisms by increasing the number of behaviors, the intensity, or employing them in different combinations. Altman (1975) explained, "If a person cannot achieve a desired level of boundary regulation, additional mechanisms may be mobilized."

Unfortunately, Altman's boundary mechanisms were specific to the physical environment and cannot readily be applied to SNSs. The tangibility yet lack of physicality of SNSs changes the overall dynamics of the boundary regulation process. First of all, Altman's mechanisms do not readily translate into virtual environments. For

instance, if someone posts something inappropriate on one's Facebook Wall, using physical distance or body language to signal one's disapproval is not an option. Moreover, new mechanisms have emerged that are not often employed in the physical world, such as creating multiple profiles (Stutzman and Hartzog 2009) to manage different groups of friends. Overall, mechanisms for boundary regulation within SNSs have not been well-defined. I believe that the lack of understanding of SNS boundary mechanisms largely contributes to the difficulties SNS users have in maintaining their boundaries. Therefore, we aim to define the set of boundary types and mechanisms available and applicable specifically to this unique social environment. My goal is to identify boundary regulation mechanisms, both technological and behavioral, that are relevant to SNSs and better understand how end users employ these mechanisms to manage their social interactions with others. In this chapter, I present a taxonomy of five categories of privacy boundary types: relational, network, territorial, disclosure, and interactional. I further break down these categories into sub-categories. I also present specific interface controls provided by SNSs as mechanisms for each type of privacy management. In addition, I show evidence from SNS users that suggests boundary regulation is a mounting concern that, if improved, could serve to enhance SNS user experience and possibly facilitate true connection through online social networking.

3.1 Methodology

Two qualitative approaches were combined to develop the taxonomy of interpersonal boundary types within SNSs. First, I applied the concept of feature-oriented domain analysis (Kang, Cohen et al. 1990), using SNSs as the application domain, to systematically identify prominent interface controls that could be leveraged for

interpersonal boundary regulation. I performed this analysis in February 2011 by examining commonalities and variations in the features available within five popular SNSs: Facebook, MySpace, LinkedIn, Hi5, and Ning. Features were abstracted and conceptually grouped to lay the foundation of the taxonomy. Next, I conducted semi-structured interviews of SNS users by asking them how they managed their SNS social interactions. For instance, I asked participants how they handled friending and unfriending, overlapping social circles, personal disclosures, updates from others, and interpersonal conflicts within their SNSs. Boundaries are often the points where interpersonal conflicts occur; therefore, understanding the types of conflicts that SNS users experienced helped us identify the different types of privacy boundaries SNS users had to manage. Participants were asked to base their responses on actual past experience as opposed to speculating what they would do given a particular scenario. Interview participants were recruited via postings on Facebook and email. I specifically targeted adult Facebook users, as opposed to students, as a criticism of past research has been the predominant use of college students. Interviews were conducted via Google Voice, Skype, or email. I transcribed the audio recorded interviews using InqScribe and qualitatively coded them using Atlas.ti 5.5. Priori codes (Gibbs and Taylor 2010) were first applied to the interview data based on a review of the literature and the results of the domain analysis. Then I used open coding (Strauss and Corbin 1998) to finalize the taxonomy. Quotes and anecdotes from participants are presented using a pseudonym first name for anonymity and consistently used throughout the remainder of this research. I also provide each participant's profession and age to help personify each SNS user.

3.2 Participants

I collected interview data from 21 participants, 10 females and 11 males. Thirteen interviews were audio recorded averaging 58 minutes each. Eight interviews were completed via email with follow up questions totaling 50 single-spaced pages (out of over 200 pages overall). The average age of participants is 36 years old, ranging from 21 to 60. Participants primarily used Facebook, with 16 participants logging in daily and four participants logging in weekly. Six participants reported using MySpace weekly to annually, and three said they used to have MySpace accounts but had deactivated them. Eight participants reported having Twitter accounts and six participants had LinkedIn accounts. Participants also reported being a member of a variety of other SNSs, including Ning, Hi5, LibraryThing, Shelfari, Xanga, and others. I interviewed one participant who is not a member of any SNSs, though he frequently used his wife's Facebook account. The interviews confirmed priori codes and identified additional, emerging boundary categories. They also led us to build a hierarchical taxonomy by identifying key dimensions within each of the categories presented below.

3.3 SNS Boundary Mechanism Taxonomy

TABLE 1 summarizes the taxonomy of SNS boundary mechanisms, and I will define each component of the taxonomy in detail in the subsequent text.

TABLE 1: Taxonomy with Definitions for SNS Boundary Types

Boundary Type	Dimensions	Definition
Relationship	Connection	Regulating whom to let into one's social network
	Context	Regulating appropriate interpersonal interactions given the type of relationship
Network	Discovery	Regulating access others have to one's network connections
	Intersection	Regulating social interactions between connections or groups of connections
Territorial	Inward-Facing	Regulating incoming content for personal consumption
	Outward-Facing	Regulating semi-public content available through interactional spaces
Disclosure	Self-Disclosure	Regulating what personal information one discloses within one's network
	Confidant-Disclosure	Regulating how co-owned personal information is disclosed within one's network
Interactional	Disabling	Regulating potential interaction through turning on/off interface features
	Blocking	Regulating overall access of oneself to specific individuals outside of one's network

3.3.1 Relationship Boundaries

SNSs implement friend-based privacy policies, where sharing and connecting is based on whether or not someone is part of one's social network. Yet, the process of friending and unfriending is so complex that it has created social anxiety and drama for many SNS users (boyd 2006; Brzozowski, Hogg et al. 2008; Hogg, Wilkinson et al. 2008). Studies have shown that social pressures influence us to accept friend requests from "weak ties" as well as true friends (boyd 2006; Brzozowski, Hogg et al. 2008). Thus, we have developed an online social norm called "hyperfriending" (Fono and Raynes-Goldie 2006) where only 25% of our online connections represent true friendship (Zinoviev and Duong 2009). Once a "friend" has been added to one's network,

maintaining appropriate levels of social interactions in light of one's relationship context with this individual (and the many others within one's network) becomes even more problematic (boyd 2006). Since each friend may have different and, at times, mutually exclusive expectations, acting accordingly within a single space has become a challenge. As boyd points out, teenagers cannot be simultaneously cool to their friends and to their parents (boyd 2006; boyd and Ellison 2007). While real life relationships are notorious for being complex, one of the biggest criticisms of SNSs are that they often simplify relationships to a "binary" (boyd 2004) or "monolithic" (Brzozowski, Hogg et al. 2008) dimension of friend or not friend. Due to this collapsed context of relationships within SNSs, acquaintances, family, friends, coworkers, and significant others all have the same level of access to an SNS user once added to one's network - unless appropriately managed. To manage these challenges, relationship boundaries must be negotiated when deciding to form a relationship connection and subsequently when defining the appropriate context for that relationship. However, relationship boundaries are often overlooked when discussing SNS privacy. Therefore, I will discuss both relationship connection and relationship context boundary mechanisms specific to SNSs.

Primary mechanisms for managing relationship connection boundaries included: access level permission to request friendship, denying friend requests, and unfriending. The SNSs in this study are all reciprocal networks (where a friend request must be accepted for a connection to be formed) while SNSs such as Twitter and Google+ allow unilateral relationships. SNSs differed on access level options users could specify for allowing friend requests. For instance, Facebook access levels include Everyone and Friends of Friends while MySpace users can specify Everyone, 18 or Older, and Bands,

Filmmakers, or Comedians. All SNSs provided controls for denying a friend request or unfriending, but social cues discouraged such actions. For instance, Facebook asks users to "Confirm Friend" or "quietly ignore" a friend request. Friendship is often encouraged visually by emphasizing accepting over denying the request, as illustrated for MySpace (FIGURE 1). Conversely, interface controls for unfriending are de-emphasized or difficult to find.

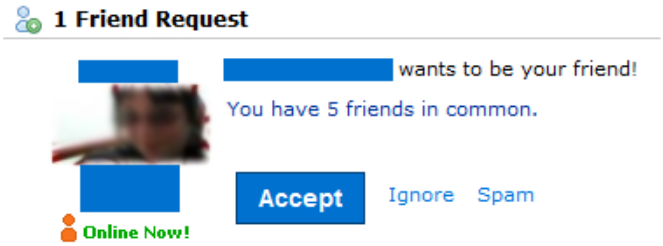


FIGURE 1: Approving a Friend Request on MySpace

Relationship context directly impacts our boundary regulation choices. The interaction one desires with a spouse, for instance, is different than interaction appropriate with a stranger. Three main groups of SNS friends have been delineated through past research: true friends (strong ties), acquaintances, and random acquaintances (both weak ties) (Zinoviev and Duong 2009). All the SNSs except Ning allow users to label friend groups for personal use - for example: "College Buddies" or "Co-Workers." Boyd describes this as "overloading" friends to represent different contexts than just friendship (2006). However, only Facebook lets users leverage those friend groups to set access levels for sharing items such as status updates, contact information, and pictures. TABLE 2 includes a summary of the relationship management controls for both relationship connection and context available across the five SNSs.

TABLE 2: Relationship Boundary SNS Interface Controls

Boundary Type	Interface Controls	Facebook	MySpace	Hi5	LinkedIn	Ning
Connection	Access Level - Friend Request	X	X	X	X	
	Deny Friend Request	X	X	X	X	X
	Unfriend/Remove Connection	X	X	X	X	X
Context	Group Labeling	X	X	X	X	
	Group Management	X				

My participants had very different boundary permeability, or level of openness (Petronio 2002), when choosing whom to friend. Three distinct relationship connection boundary profiles emerged – closed, moderate, and open. I grouped participants by their stated perception of their boundary permeability and validated this by recording their number of Facebook friends.

TABLE 3: Participants' Boundary Permeability

Friending Strategy	Participants (Number of Friends)	Average No. Friends	Standard Deviation	Example Quotes
Closed - Only Intimate Friends and Family	Alana (42), Dollie (42), and Antonio (69)	51	15.59	"Definitely intimate friendships and family members" – Alana
Moderate - Friends and Acquaintances	Gina (100), Larry (101), Gordon (112), Becky (161), Nelson (162), Steve (279), Edward (363), Corinne (551), Tia (563), Fred (219)	261	176.80	"I do not friend strangers on Facebook. I think the majority of my "friends" would be classified as acquaintances, colleagues, and friends from the past." –Becky
Open - Friends to Strangers	Lorrie (69), Allen (130), Regina (410), Kurt (585), Lynn (795), Kristine (1246), Tyrone (1554)	684	556.04	"honestly mostly strangers right now, I will except your friend as long as I have more than a couple friends in common. That's just because mainly I get friend requests from, mothers and kids who are needing pictures, so I kind of have to let them in." –Lynn

The first group only allowed intimate relationships into their networks, and were very quick to reject friend requests and remove friends should they cause them problems. This was the smallest group with the lowest average number of friends and lowest standard deviation.

> "No strangers, no colleagues, and no immediate family [are in my network]. I wanted to keep it just for friends, close friends not usually anyone that I don't typically associate with on a daily basis." –Dollie, Mother, 34

The second group had moderate relationship boundaries by allowing friends to acquaintances into their networks. They consistently had moderate rules developed for denying friend requests, but most of them (80%) rarely unfriended anyone, ever.

Finally, the third group had very open relationship connection boundaries allowing anyone from friends to strangers into their networks. This group had a very large deviation in the average number of friends with friend counts ranging from 69 to 1554. Upon further examination, participants fell into two subcategories that explained this large difference. Lorrie, Allen, and Regina friended strangers in order to more effectively play games through SNS apps.

> " I have a lot of people friended quote-unquote, that I don't actually know. But I friended them because they played the same games that I did and I needed people to boost my numbers and stuff." –Lorrie, Security Officer, 22

Kurt, Lynn, Kristine, and Tyrone friended strangers as a way to promote their professions. Lynn and Tyrone are both photographers who post many of their clients' pictures on Facebook for self-promotion. Kurt is a dating coach who often gets clients (and picked up girls) through Facebook. Therefore, his very social profession is intertwined with his large social network.

> "I don't have that much of the defined boundary between my personal life in my professional life. In fact, for the dating coach thing part of it is kind of living the life style. Being that guy, if you will. To an extent, it is a little like being a little bit of a celebrity." –Kurt, Dating Coach, 32

Kristine is a young adult author who says she "blanket accepts" friend requests from almost anyone because they could be one of her fans.

> "When I get a friend request, they might be somebody who has read my book or they might be some random troll or who knows. So I pretty much just blanket accept everyone and just kind of assume that either they read my book." –Kristine, Author, 37

Individuals who let strangers into their social network to play games tended to have lower overall friend counts than those who consistently let strangers into their networks for work promotion purposes. In either case, individuals with loose friending boundaries also rarely unfriended, often leaving their networks large and open.

Overall, regardless of boundary permeability, I found that unfriending was rare, if at all. Seventy-five percent of participants said they rarely unfriended anyone (1-3 people), while 24% had never unfriended anyone. In general, individuals let people into their inner circles relatively easily and had a hard time removing them.

> "I've remained friends with some people because I know it would cause more of an issue if I unfriended them then if I just left them on there." – Becky, Teacher, 29

Relationship context boundaries were even more problematic for SNS users. Even though relationship context is so important to regulating interpersonal boundaries, the majority of the participants did not manage relationship context within their SNSs at all. Only 33% of SNS users separated friends into groups, and only two participants actually used these groups to manage access level privacy. Grouping friends by type of relationship was characterized more as a strategy to organize friends to be able to reference later and manually use the list to send directed communications to a group. However, grouping rarely led to contextual interactions, such as posting status updates directed to a specific group. Individuals felt that using this mechanism was a hassle or did not trust their own abilities to categorize and keep groups up-to-date. In addition, many of the participants did not know they could use groupings, such as Facebook friend lists, to post directed status updates or pictures.

> "I've never done that because I did not know that I could do that. If I am addressing a group, it is a general message to everybody, on my wall anybody can see it, but if I say what's up PDC, what's going on for the

> night? The people and that group know who I'm talking about." –Tia, Administrative Assistant, 37

In summary, I found that most participants did not frequently leverage mechanisms available for managing relationship connection and context boundaries. Only a few participants limited their networks to close friends and family members and very few unfriended. Therefore, many participants had relatively large networks that included multiple relationship contexts ranging from family members to strangers. Even so, participants did not often use the mechanisms available for managing relationship context. Lack of relationship boundary management can be attributed to a few factors. Some individuals experienced peer pressure which led to accepting unwanted friend requests and not unfriending. Others lack the awareness that interface controls even existed to manage relationship context while those who were aware found it to be too much of a hassle. It is possible that these problems are exacerbated by the fact that relationship management is rarely characterized as a means of privacy regulation within SNSs. Lack of appropriate relationship boundary regulation contributed to reduced intimacy as participants made their interactions more generalized, as to be appropriate for a large and varied audience, a coping mechanism addressed in more detail in Chapter 4. Because of this, some individuals experienced a sense of loss of their authentic selves within their SNSs. This was especially true for the four participants who used their networks for both professional and personal use.

3.3.2 Network Boundaries

An individual's social network structure contains cliques, groups of people whom all know each other, as well as independent sets of friends that have no common connections (Scott 2009). SNS users not only have to manage their boundaries with

individual connections, but also the transitive interactions that may arise between those connections. Network boundaries are necessary mechanisms to demark separation between one's connections or groups of connections. Traditional social networks are physically spread out and linkages between individuals are implicit or hidden to others; therefore, they are more easily managed. For example, estranged friends are invited to dinner on separate occasions. Online, those connections become transparent (boyd and Ellison 2007) and physical distance is removed, making one's network more accessible to discovery and affording potential social interaction between otherwise unconnected parties. Overlap of different social contexts can cause problems for consistent self-presentation. I uncovered two types of network boundaries in this study: network discovery and network intersection boundaries. Network discovery deals with how individuals manage the exposed, traversable nature of their networks to regulate overall access by others. Network intersection boundaries are used to regulate how different social circles within one's network overlap and interact.

This analysis concluded that SNSs lack interface controls for flexible management of network boundaries. Only Facebook provides a separate functionality for managing access level of one's friend list from being discoverable by everyone, friends of friends, friends only, or specific individuals. However, Facebook users cannot partially separate sets of friends from others. The other SNSs are even less flexible. MySpace, Hi5, and Ning tie one's friends list to one's profile visibility. Therefore, entire profile access level must be changed in order to manage discoverability of one's network. Hi5 and LinkedIn allow users the binary option to show or hide their connections completely, while MySpace users have learned how to use Cascading Style Sheets in their templates

in order to hide their friend list. Thus, managing discovery of others within one's network is only available to users at a very high level. The same is true for managing network intersection boundaries. Similar to relationship context management, the only support for network intersection boundaries is the ability to create friend groups or lists. However, this does little to facilitate or prevent interaction between one's friends. Only Facebook provides a mechanism for posting information to specific groups so that only members of that group can interact within that thread. In this case, Facebook users can prevent groups of friends from overlapping for narrowed contexts, but they still have no way to manage social interactions between individuals. Therefore, current network boundary management tends to be all or nothing. TABLE 4 summarizes the interface controls for each SNS for maintaining network discovery and intersection boundaries.

TABLE 4: Network Boundary SNS Interface Controls

Boundary Type	Interface Controls	Facebook	MySpace	Hi5	LinkedIn	Ning
Discovery	Access Level – Friend List	X				
	Access Level – Profile		X	X		X
	Hide Connections		X	X	X	
Intersection	Group Management	X				

Serendipitous discovery of unknown relationships or as Allen described it, "six degrees of separation," tended to outweigh potential risks for SNS users when it came to network discovery boundaries. Six participants shared stories about how they were able to discover interesting linkages between their friends or use connections to find others.

> "I discovered that a girl I know from roller derby is 'friends' with the woman that runs the burlesque show I attend - never would have thought that one!" –Becky, Teacher, 29

However, in cases where individuals with large networks utilized their accounts as a means for marketing their services, they often found that others exploited their lack of network discovery boundaries for personal gain. This was especially the case for Lynn and Tyrone, photographers who have competitors in their networks.

> "Every time I take pictures of someone and tag them in it, he [competitor] will friend request that person to his page, and that bothers me because it feels a little stalker-ish. He is trying to build his numbers to get a bigger name on his page." –Lynn, Photographer, 30

Self image was also a network discovery issue where three participants were mindful of whom was visible in their networks as it could be perceived as a bad reflection on them. However, only two participants had ever hidden their friends list from others; Alana had done so accidentally.

Network intersection boundaries were a bigger concern than network discovery to many participants due to potential for conflict. However, due to the lack of interface controls for regulating network intersection boundaries or awareness of how to use them, only two participants used Facebook's ability to post statuses, pictures, and other information to limit interaction to specific groups. The lack of relationship context management, unfortunately, led to many instances of unwanted conflict between participants' Facebook friends.

> "I have friends and relatives who are at extreme opposites religiously and politically. A close friend asked me once, "Who ARE those people and why are they so angry all the time? It is very likely to lead to a heated, sometimes hateful confrontation between my 'friends'. I really don't like that!" –Steve, Minister, 57

However, Regina had a different perspective:

> "I find it kind of wonderful that we have this space where we can talk about things that we disagree. And I think I help contribute to that being the kind of space that people can experience. I think that's what

> democracy ought to be all about so I think it is kind of cool when it happens." –Regina, HIV Awareness Coordinator, 60

Regina manages how her friends interact within her network by personally moderating conversations when they get out of hand.

> "I am 60 years old, so I can pull out the grandma and say 'you know, that really wasn't okay.' Sometimes it works, and sometimes there is a bit of huff but people do pipe down at that point." –Regina, HIV Awareness Coordinator, 60

Participants did little to manage network boundaries using SNS interface controls which often resulted in unwanted interactions and conflicts between one's friends. While feature awareness was a contributing factor, lack of effective controls for boundary regulation tended to be the primary reason for the lack of use.

3.3.3 Territorial Boundaries

Territorial boundaries involve "use of places and objects in the environment" to personalize or mark "ownership, possession, and occasional active defense"(Altman 1975). I found two types of SNS territories in use: inward-facing territories and outward-facing territories. Inward facing territories such as Facebook's "News Feed," LinkedIn's "Updates," Hi5's "Network Updates," MySpace's "Stream," and Ning's "Latest Activity" serve as spaces for personal consumption of updates from connections or friends (e.g., photo uploads, links, videos, new connection updates). Overall, SNSs provided three mechanisms for managing inward-facing territories: filters, preference settings, and hiding. Filters provide a temporary territorial boundary; managing preference settings gives users more permanent control over what appears and from whom. Hiding generally occurs on a real-time basis and is specific to all content from a specific individual. Unhiding an individual requires additional work of modifying accounts settings. The five SNSs were very inconsistent as to the filters and preference

settings provided through their interfaces. For instance, MySpace allows users to set a preference for what type of friend updates they would like to see in their Stream. In contrast, Facebook does not currently provide any preference settings to permanently manage News Feed updates by type.

Outward-facing territories, such as Facebook's Wall or Timeline, are dynamic representations of users and their SNS activities. Based on Altman, I classify such outward-facing territories as secondary or "interactional" territories that are a "blend of public or semipublic availability and controlled by regular occupants" (Altman 1975). Because these secondary territories are bridges between private and public there is often boundary confusion. "Secondary territories, because of their semipublic quality often have unclear rules regarding their use and are susceptible to encroachment by a variety of users, sometimes inappropriately and sometimes predisposing to social conflict" (Altman 1975). Different SNSs choose to implement different management techniques including access level manipulation (managing who can see what), deletion, untagging, and moderation. For instance, LinkedIn has the fewest controls in terms of regulating outward-facing territorial boundaries. This choice may reflect higher expectations within a professional network to appropriately self-monitor. Facebook does not provide the ability to moderate posts or comments before they are viewable by one's network. Therefore, action has to be taken proactively by setting access level permissions for everyone within one's network or retroactively by deleting or untagging unwanted interactions or content after the fact. TABLE 5 summarizes SNS interface controls available for territorial boundary support across the five SNSs.

TABLE 5: Territorial Boundary SNS Interface Controls

Boundary Type	Interface Controls	Facebook	MySpace	Hi5	LinkedIn	Ning
Inward-Facing	Filters	X	X	X	X	
	Preference Settings		X	X	X	
	Hiding	X	X		X	
Outward-Facing	Access Level - Viewing Permissions	X	X	X		X
	Delete Posts or Comments	X	X	X	X	X
	Untagging	X	X	X		
	Moderation		X	X		X

Inward-facing territories were often perceived by participants as ephemeral in nature, undirected, and private; therefore, inward-facing territorial management was not a high priority for participants. Inward-facing territorial boundary regulation was also perceived as unwieldy due to the sheer amount of content posted by participants' friends on a daily basis. Thus, the predominant mechanism for managing inward-facing territorial boundaries used by nearly half (43%) of the SNS users was to skim then ignore unwanted content, a coping behavior discussed in more detail in Chapter 4.

Otherwise, four participants expressed confusion over their ability to regulate their inward-facing territories within SNS environments, saying they were unaware or unsure about how to hide someone from their News Feeds. Participants who leveraged hiding differentiated between hiding games and hiding people on Facebook. While almost half of the participants said they hid Facebook games from their News Feed, only 29% said they hid individuals from their feed. Participants chose to hide content from people they wanted to remain in their networks but had issues with the type of content the

person most frequently posted. Interestingly, hiding tended to be a fairly permanent boundary. Once an individual was hidden, they were rarely unhidden again in the future. Therefore, participants had to actively engage with these individuals or be the recipient of direct communication from the hidden friend in order to have continued interaction through the SNS.

> " I don't unfriend them but I just cut off their news feed, and if I am that interested in what she is doing then I'll just go to her page and check her out. I hide their status updates from my news feed. –Tia, Administrative Assistant, 37

A potential negative consequence of hiding friends instead of unfriending is that SNS users may forget that person is part of their social network and continues to have access to interact and consume information that they share with their social network.

Outward-facing territorial boundary regulation was characterized with even more uncertainty and implied lack of control. When asked how they managed content that was publicly shared with others in their network, 29% of the participants immediately started talking about how they managed information contained in their user profile instead of what was being shared on their Walls (or equivalent outward-facing territories). This suggests that individuals feel like they have control over personal information in their profiles but rarely think about managing how information and interactions are shared through their interactional territories even when SNSs provided the functionality to do so. In the few cases where access level viewing permissions were manipulated, they were generally to hide pictures (3 participants) or posts from others in order to avoid conflict (2 participants).

> "My wife and I have had to make her father unable to see any of our photos of a niece, since she is black. [Her] dad is a horrible racist so his knowing about her would negatively affect her and no one deserves that." –Allen, Technical Services, 31

Many participants did report removing individual items from their territories: 52% of the participants said they have deleted a post or comment while 38% have untagged themselves in a photo. Reasons for doing so included avoiding conflict, filtering out negativity, protecting personal information, or maintaining a certain self-image. However, some participants expressed discontent with this strategy because they felt they always had to monitor their outward-facing territories to delete unwanted content immediately to minimize any potential damage. Therefore, three participants who were both MySpace and Facebook users said that they wished Facebook also allowed moderation.

> "I did not accept a friend request from an ex [on Facebook]. …not knowing what he was going to say. If I could monitor what he would post before he could post it, then we could have been friends." –Tia, Administrative Assistant, 37

Participants generally expressed a level of frustration over their lack of control when trying to manage their outward-facing territories.

> "I hate Facebook. I don't trust it, and I have no idea what I'm really sharing and who's seeing what." –Alana, Substance Abuse Counselor, 28

For inward and outward-facing territories, I found a general frustration with the boundary regulation process even though interface controls were available for boundary management. Inward-facing territories were just too difficult to control, while participants felt they lacked control over their outward-facing territories. This led to dissatisfaction in use as well as maladaptive coping behaviors.

3.3.4 Disclosure Boundaries

Existing SNS literature is heavily focused on disclosure boundaries, otherwise known as information privacy (Palen and Dourish 2003; Iachello 2007; Tyma 2007; Frampton 2010); therefore, disclosure boundaries are also an integral component of the

taxonomy. Petronio's work *Boundaries of Privacy. Dialects of Disclosure* outlined five suppositions related to disclosure boundaries. First, disclosure privacy dealt specifically with the disclosure of private information. Second, a boundary exists between private and public information. Third, individuals have a sense of ownership or control in regard to this private information. Fourth, a rule-based system defines how individuals manage this privacy boundary. The rule management operations associated with this supposition include boundary linkages, co-ownership, and permeability. Boundary linkages are "connections that form boundary alliances" (Petronio 2002). Co-ownership deals with the privilege to have joint ownership of one's private information, and permeability deals with "how opened or closed the collective boundaries are once they are formed" (Petronio 2002). Therefore, disclosure boundaries require a coordination process between co-owners of private information. Fifth, this process is dialectical in nature. Here Petronio borrowed from Altman's theory to reiterate that an individual's desire for information privacy may change over time. In sum, these suppositions are the basis of Petronio's Communication Privacy Management Theory (CPM) (Petronio 2002). Petronio describes two types of boundaries: personal and collective. Personal boundaries deal with how one shares private information about one's self. Alternatively, collective boundaries involve private information shared with others. "A boundary is transformed from a personal to a collective when someone self-discloses to a confidant," explained Petronio (Petronio 2002). Therefore, I examined two types of disclosure boundaries: Self-disclosure involving private information about one's self, and confidant-disclosure mechanisms to set boundaries for information that is co-owned or shared by others (Petronio 2002).

Self-disclosure is undoubtedly the most prolifically studied boundary mechanism within SNS privacy research (Joinson 2001; Mazer, Murphy et al. 2007; Norberg, Horne et al. 2007; Tufekci 2008; Christofides, Muise et al. 2009; Krasnova, Kolesnikova et al. 2009; Nosko, Wood et al. 2010; Caine, Kisselburgh et al. 2011; Ellison, Vitak et al. 2011; Lampinen, Lehtinen et al. 2011; Ledbetter, Mazer et al. 2011; Park, Jin et al. 2011; Stutzman, Capra et al. 2011). Privacy settings related to self-disclosure have been studied in detail (Acquisti and Gross 2006; Debatin, Lovejoy et al. 2009; Ellison, Vitak et al. 2011); therefore, I will just highlight some of the key dimensions of variation between the SNSs. SNS interface controls that support self-disclosure boundaries vary along two primary dimensions. First, is the level of granularity or type of information that one can share with others. Facebook is the most complex, allowing users to disclose and control more granular boundaries for categories such as bio, website, email addresses and 8 other categories. Others have fewer information groupings which make user profiles chunkier, and thus self-disclosure boundaries less granular. The second dimension is whom one can share this information with or one's access level permissions. All SNSs examined err on the side of sharing more information to more people by allowing users to give access to "Everyone" or "All Users." Similarly, all these SNSs give the option for access for "Friends" or "Connections" only. Comparatively, Facebook gives the most flexibility by giving users even more options for controlling personal information access level. Facebook users can customize privacy settings by group, network, or down to an individual level (TABLE 6).

TABLE 6: Self-Disclosure Access Level

Privacy Level	Facebook	MySpace	LinkedIn	Hi5	Ning
Everyone	X	X	X	X	X
Friends	X	X	X	X	X
Everyone 18 and Older		X			
Friends of Friends	X				
Friends and Networks	X				
Specific Individuals	X				
Only Me	X		X	X	X

Because technology fully mediates social interactions within SNSs, confidant-disclosures are strongly linked to one's outward-facing territories. For instance, confidant-disclosures typically occur when a connection posts one's personal information so that it is viewable for others to see on one's Wall, such as tagging pictures of friends without their permission. Therefore, the same mechanisms that are used to form outward-facing territorial boundaries are the same ones SNS users must employ to create confidant-disclosure boundaries (TABLE 5). The distinction in practice is that confidant-disclosure boundary regulation focuses on disclosure of private information of oneself by others. Outward-facing territorial boundaries can apply to any type of interaction. To illustrate the difference, when Tia deleted profanity from her Wall, she enforced an outward-facing territorial boundary. Yet, when Dollie deleted a comment from a friend congratulating Dollie on her pregnancy (before she shared the news publicly), she formed a confidant-disclosure boundary.

In terms of self-disclosure boundaries, SNS users were unconfident or skeptical about their SNS privacy settings and, thus, tended to not take advantage of the granularity and access levels provided to manage self-disclosure. Seven participants displayed a lack

of understanding in their settings or experienced an accidental, negative disclosure that made them distrust that the settings even worked correctly.

> "I was annoyed that Facebook had my phone number for all my friends and family and their friends and family to see." –Gina, Student, 30

Therefore, instead of supplying personal information to the SNS and managing access level, they simply did not supply the information at all, a form of self-censorship which is a coping mechanism discussed further in Chapter 4.

While participants generally distrusted SNS privacy settings, they exhibited a general trust towards those in their social networks to not breach confidant-disclosure boundaries.

> "Most people are pretty good. And I think that is also because so many people are friends with people who are family and you know people from high school or whatever." –Kristine, Author, 37

Yet, a failure to coordinate confidant-disclosures often led to unintentional interpersonal conflict. For instance, Dollie's friend innocently congratulated Dollie on her pregnancy via her Facebook Wall. Dollie had not announced her pregnancy to the majority of her family and friends and was upset by this breach of confidence. As another example, Kristine had to delete a comment from her niece regarding an out-of-state move because Kristine's husband had not yet notified his company that he was changing jobs and relocating. This finding is consistent with Altman's observations that interactional territories are pre-disposed to boundary confusion and interpersonal conflict because participants are unclear of appropriate boundaries. In summary, individuals tended to distrust self-disclosure interface controls and instead leveraged coping mechanisms to manage their self-disclosure boundaries. In contrast, participants tended to have an implicit trust towards their friends but often had to leverage interface controls for

retroactively managing unwanted confidant-disclosures due to misunderstandings and failures in boundary coordination.

3.3.5 Interactional Boundaries

Interactional boundaries limit direct access to oneself, thereby avoiding the need for other types (i.e. relational, territorial, etc.) of boundary regulation with others. SNS users can erect interactional boundaries by disabling interactive interfaces such as one's Facebook Wall or MySpace Comments. Also in "Things others share" Facebook allows users to specify whether or not one's friends "can comment on posts," "Suggest photos of me to friends," and "Friends can check me into Places." The most drastic form of interactional boundary management is "Blocking." When one blocks another user that user cannot view or contact that person at all. LinkedIn is unique that it does not provide any controls for interactional boundary regulation, perhaps because of the more limited interactions provided by a site aimed at business professionals. TABLE 7 summarizes the interface controls for interactional disabling and blocking.

TABLE 7: Interactional Boundary SNS Interface Controls

Boundary Type	Interface Controls	Facebook	MySpace	Hi5	LinkedIn	Ning
Disabling	Disable Search (Finding You)	X				
	Disable Posts/Commenting	X	X	X		
	Disable Tagging	X				
	Disable Friend Requests			X		
	Disable Chat	X	X			X
Blocking	Blocking	X	X	X		X

Participants who implemented disabling or blocking interactional boundary mechanisms tended to have past negative experiences and wanted to avoid confrontation and potential future drama. Interactional boundaries were characterized as an extreme measure for when the risk of boundary violations outweighed any potential social value that could come from interaction. However, only five participants reported disabling features including their Wall (2), picture tagging (1), and chat (2).

> "I do not feel safe or trustful of [people] to NOT post bad things on my statuses and photos. I turned off my wall on Facebook as a result." – Allen, Technical Services, 31

However, five participants were unaware or had never thought about disabling interactional features of the interface while one accidentally disabled a feature by mistake.

Only four participants blocked others due to extreme conflicts, stalking, or "just being nosey." Three participants reported blocking due to spam. However, most participants had never blocked anyone because they never felt "uncomfortable enough" to do so or in fear of being rude.

> "I'm not good with confrontation, so I just [unfriended] him, but I'm struggling with trying to block him because he can still see my pictures. I don't want to be rude to him, so I'm struggling with do I just be rude or do I just let it go? I don't know." –Lynn, Photographer, 30

Social norms and feature awareness problems were the primary reasons individuals did little to create interactional boundaries through the use of SNS interface controls. These two obstacles were only overcome when extreme negative experiences motivated users to reassess their interactional boundaries.

3.4 Discussion

Boundary mechanisms used in the physical world do not translate well to the new world of online social networking, and thus need to be understood in this new context. The taxonomy of boundary types and associated mechanisms demonstrates at the conceptual level the variety of ways SNS users can regulate their boundaries through SNS interfaces. I found that network, territorial, disclosure, relationship, and interactional boundaries can be employed individually, and in combination, by end users who want to better regulate their social boundaries with others. I broadened the definition of SNS privacy so that it is no longer focused solely on protecting private, personal information and instead acts as a means of optimizing social interactions. It serves as a foundation to build additional SNS boundary regulation theories and as a basis for the design of improved SNS interfaces. My approach is novel in that it incorporates perspectives of both environmental design of SNS interfaces and end user behaviors into a cohesive taxonomy. This taxonomy can be used as a framework to benchmark boundary regulation features across the domain of SNSs or evaluate new SNSs. For example, Google+ improved support for relationship context boundaries through circles and reduced emphasis of outward-facing territories by not implementing the equivalent to Facebook's Wall. Of the five SNSs in this study, Facebook provided the most affordances and since the initial analysis has updated its interface to incorporate new boundary mechanisms such as the ability to review tags before they are posted to one's Timeline (previously Wall). Finally, by showing that SNS users struggle to negotiate their social interactions online, I motivated the need for design considerations to improve support for these mechanisms. A better understanding of interpersonal boundary

regulation with respect to SNS interface design can help users achieve a deeper level of connection while also protecting them from harmful interactions with others.

Overall, the participants had fairly loose friending criteria, feeling obligated to accept most friend requests and rarely removing connections. Very few participants modified their interactions given relationship context. Instead, they often had strict requirements for self-disclosure which reduced their personal level of sharing. Yet, confidant-disclosures were managed through an implicit level of trust within one's network (even though relationship boundaries were not well monitored). Network discovery was often encouraged by participants, but network intersection was a problem due to lack of interface controls and the ability to manage interactions between independent sets of friends. Participants deemphasized inward-facing territorial boundaries because of low perceived risk and high levels of burden; outward-facing territorial boundaries were reactive instead of proactive, requiring constant monitoring to remove unwanted content. Interactional boundaries were used, though rarely, by individuals who felt the possibility of future negative interactions outweighed any potential for future positive interactions.

In all cases, participants cited points of contention when regulating each of the boundary mechanism categories. As a result, boundary violations led to conflict or negative emotional impact on SNS users. This motivates the need for improved SNS interface support for interpersonal boundary regulation in order to improve social outcomes and reduce interpersonal conflict. Overall, this study found that SNS interface controls by themselves were not effective in facilitating boundary negotiation. Some interface controls were inflexible to change such as the permanence I saw when hiding

individuals from one's News Feed. Other controls, such as the ones for network boundaries, did not provide enough options and forced SNS users to make all-or-nothing decisions regarding their privacy. Still others, such as mechanisms for managing inward-facing territories, required too much effort to be effective. Otherwise, SNS users lacked knowledge that interface controls existed for boundary management or the risk awareness that motivated them to more actively manage their privacy boundaries. I was surprised to find that participants often opted to develop their own coping mechanisms over using built in interface controls to manage each of the different boundary types. This unexpected finding led us to further analysis of these coping behaviors, which is presented in Chapter 4.

CHAPTER 4: FIGHTING FOR MY SPACE: COPING MECHANISMS FOR SNS BOUNDARY REGULATION

Based on the interview findings in Chapter 3, I established that SNS users often struggle with SNS interface controls to maintain appropriate interpersonal boundaries within their SNSs. Technology-supported boundary mechanisms are specifically designed to address particular boundary regulation needs through interface controls but still may not completely meet SNS users' privacy needs. I summarized these mechanisms through a feature oriented domain analysis in Chapter 3. Typical problems experienced by the participants when using SNS interface controls as boundary mechanisms included lack of feature awareness, difficulty in use, and a disconnect between privacy goals and functionality provided by the SNS interface. Therefore, I repeatedly observed participants finding other ways to achieve the privacy level they desired. I define coping mechanisms as the behaviors developed by SNS users outside of the SNS interface or through the unintended use of interface features in an attempt to effectively maintain or regain their interpersonal boundaries. Coping behaviors are employed to reduce emotional distress when desired privacy levels have not been achieved (Altman 1975). For instance, untagging is a technology-supported boundary mechanism for managing photo sharing, while using chat to tell a friend to take down a picture is a form of coping. These round-about and often sub-optimal approaches give us insight into interactional design problems SNS users face when trying to socialize online. They also afford design opportunities for SNS developers. This chapter focuses specifically on how users try to overcome interface

controls for boundary regulation that do not meet their privacy needs. Through a focused qualitative analysis of the interviews, I identify and categorize the myriad of coping mechanisms SNS users have developed to manage their social interactions.

4.1 Background and Motivation

One of Altman's guidelines for environmental design stated that "if privacy and its associated mechanisms are ignored or rigidly incorporated into designs . . . then people will have to struggle against the environment to achieve what they consider to be appropriate degrees of interaction" (1975). Altman's theories of environmental design for regulating social interactions in physical spaces are often referenced in SNS privacy literature but are rarely applied as principles of design for SNS interfaces. Because SNS visionaries such as Zuckerberg value sharing over boundary regulation, SNS interfaces shamelessly promote open and unbounded sharing. This helps explain the conflicts and struggles I observed from the participants during the interviews and the unexpected and frequent emergence of coping behaviors. Ineffective boundary regulation can lead to a state of social crowding or isolation, having much more or much less social interaction than one desires (Altman 1975). In these states, individuals experience stress and develop coping mechanisms to reduce that stress. Altman (also referencing Milgram) outlined a number of coping mechanisms individuals employ in the physical world in order to achieve acceptable levels of stimulation (Milgram 1970; 1975). They included reducing interaction through filtering, ignoring, and blocking as well as withdrawing from interaction or meeting it with aggression. For instance, crime, juvenile delinquency, homicide, and civil strife have all been related to social crowding and high population density (Altman 1975). These categorizations corresponded closely to Horney's mature

theory and coping strategies related to patterns of neurotic needs: compliance, aggression, and detachment (Horney 1945). Yet, manifestations of these coping mechanisms have not been examined within the context of SNSs.

Very few researchers have examined coping mechanisms in response to undesirable SNS privacy outcomes (Tufekci 2008; Stutzman and Hartzog 2009; Lampinen, Lehtinen et al. 2011). The related research in privacy and coping strategies often studied a specific coping mechanism in detail (Stutzman and Hartzog 2009), used students as a sampling frame (Tufekci 2008; Lampinen, Lehtinen et al. 2011), and defined privacy in terms of private versus public information disclosures (Tufekci 2008; Stutzman and Hartzog 2009; Lampinen, Lehtinen et al. 2011). While this past research is closely related, my research differs in several distinct ways. First, I studied a variety of emergent coping mechanisms and applied existing social theory to my findings. Second, I felt that it was important to examine how a diverse set of adults coped in this new social environment, and sought a variety of non-student participants. Third, past research does not make a distinction between strategies readily supported by SNS interface capabilities and those that are not (Tufekci 2008; Lampinen, Lehtinen et al. 2011). I make a clear distinction between technology-supported boundary mechanisms and coping mechanisms. Finally, and most importantly, I do not characterize privacy as only a means to regulate private versus public disclosures. Privacy encompasses multiple boundary types as presented in Chapter 3. Therefore, when I discuss coping mechanisms for interpersonal boundary regulation, I included coping behaviors from this broader perspective instead of limiting the scope to information privacy.

4.2 Methodology

Using the same semi-structured interviews of SNS users as in the previous chapter, I used Altman's definition of coping along with my conceptual distinction between technology-supported boundary mechanisms and coping mechanisms as a lens for analysis. I used open coding (Strauss and Corbin 1998) to uncover different types of coping behaviors exhibited by participants. These codes were then conceptually grouped based on the coping mechanisms outlined by Altman to determine if similar coping mechanisms were observed in SNS environments. Pseudonyms used in Chapter 3 are consistently used throughout this chapter.

4.3 Results

The interviews confirmed priori codes were present within SNS environments; filtering, ignoring, blocking, withdrawal, aggression, and compliance are all coping mechanisms previously identified as ways to reduce emotional stress and anxiety (Horney 1945; Milgram 1970; Altman 1975). However, the specific behaviors associated with these mechanisms drastically differ from the physical world. While I originally sought to match each coping mechanism to the boundary taxonomy I presented in Chapter 3, I found that many strategies were used across various boundary types. However, for the most common trends I observed, I will relate the coping mechanisms to the boundary types. To Altman's coping mechanisms, I added one additional coping strategy – compromise. Using filtering, ignoring, blocking, withdrawal, aggression, compliance, and compromise as our framework of coping mechanisms, each section below gives examples of specific coping behaviors unique to SNS environments.

4.3.1 Filtering

"Reduction of intensity of inputs by filtering devices (Milgram 1970; Altman 1975)" was a coping mechanism participants often used specifically when regulating their relationship boundaries, such as choosing with whom to connect and managing SNS interactions based on relationship context. Even though SNS participants are not confined due to physical space, many participants found that social networks that were too large became too cumbersome to manage.

> "I don't see how people can maintain if they have 1,000 friends. If I had 1,000 friends and 1/4 them are posting, I mean that is 250 posts a day. I am trying to keep it at a reasonable number." –Gordon, Restaurant Manager, 48

Filtering as a means for relationship boundary management was one way participants avoided "overmanning," which occurs when the capacity of a space is exceeded by the number of applicants. In other words, there are more people than the setting can handle. This "results in pressure to reduce applicants, raise the standard for those admitted, or increase the setting capacity" (Altman 1975). Therefore, some individuals coped with this problem by leveraging small social cues as filtering devices for relationship management as a means to keep their friend count at a manageable number. For instance, four participants noted that they use a person's profile picture as a way to decide if they would accept or deny a friend request from someone they did not know.

> "If it is a picture of somebody and they are half naked in it, then I don't accept it. So if you are showing your boobs in your picture, I am going to say no to that. Those I will turn down if it is obvious, but if it is not obvious, I will accept it." –Kristine, Author, 37

Two participants relied on relationships with mutual friends when determining if they would form a new relationship connection.

> "If we have absolutely no friends in common, I will not accept it at all." – Lynn, Photographer, 30

Overall, the reliance on such minor social cues when determining whom to friend reveals that SNS users must sometimes use sub-optimal mechanisms when developing criteria for filtering potential relationship connections. Therefore, in addition to social cues, SNS users have developed other filtering mechanisms. My previous work showed that group management within one SNS account was rarely used for regulating social interactions (Karr-Wisniewski, Lipford et al. 2011), instead SNS users segregated friends through separate SNS profiles or even different SNSs. Consistent with past research (Stutzman and Hartzog 2009), four of the participants explained the need for two SNS profiles within the same SNS to separate personal interactions from work.

> "I chose to keep my work and play profiles separate. I don't need any [co-workers] reading my work rants!... I don't accept any friend requests on my [work] page from real friends, and vice versa." –Tia, Administrative Assistant, 37

Four other participants mentioned accepting different types of friends on different SNSs (i.e. Facebook versus LinkedIn) in order to maintain appropriate network intersection boundaries.

> "I, for example, do not have some IRC friends on Facebook since they smoke marijuana. I do not. … I keep them on MySpace, mainly so they don't make me look bad, as well as harass the attractive friends I have [on Facebook] when they are high." –Allen, Technical Services, 31

The use of separate profiles or different SNSs to manage social interactions by relationship context possibly reduced the cognitive filtering process instead of doing so within one SNS account. A disadvantage of using relationship management filtering as one's primary boundary regulation mechanism was the upfront time investment required

to properly leverage this technique. Consistent rules for filtering need to be developed from the onset because implementing them after-the-fact is often difficult to do.

> "It is so hard to do at this point. If I had started off that way, I think it would have worked. [Some authors] use the fan page just for fan stuff and their regular Facebook page just for people they really know. But I think at this point I have over 1000 friends on Facebook that it would be impossible to separate it out." –Kristine, Author, 37

4.3.2 Ignoring

When individuals are presented with more information than they have the time or cognitive ability to process, they tend to make satisficing decisions versus optimal decisions due to their limited capacity (Simon 1955; Agosto 2002). In addition to experiencing social crowding, more social interaction than one desires (Altman 1975), participants also struggled with information overload which was exacerbated by the amount of content enabled through SNSs. Often, individuals felt overwhelmed by the amount of interaction they could engage in or information they could consume within their online social networks. This was especially true for individuals who did not use filtering strategies for relationship management.

> "I pretty much let everybody in, so it is tough to manage. I've got 1600 [Facebook friends] now. . . Within the last week I think I've had 100 new people so I can't manage it . . . it is just too much." –Tyrone, Photographer, 31

One coping strategy for this type of information overload that was often used by participants was the "disregard of low-priority inputs which results in ignoring," giving attention only to interactions that have direct, personal meaning (Milgram 1970; Altman 1975). Within SNSs, ignoring is most strongly associated with inward-facing territories such as one's Facebook News Feed. Eight of the participants mentioned reducing the amount of attention they paid to News Feed content. They skimmed or ignored incoming

content because they characterized it as “annoying” or “too much,” and they did not feel it pertained directly to them.

> “It's a really long list that I haven't read yet, and I'll just read the first, whatever comes up on the screen, and I won't use the scroll bar. If it's something that I needed to know, they would have contacted me directly. They would have either sent me a message on Facebook or a text or a phone call or an email. Chances are if they didn't do that then I really didn't need to know it.” –Lorrie

Alternatively, three participants actually expected their friends to ignore (or hide) them if they did not like what they posted or were annoyed by over postings. That way, they did not have to censor what they wanted to post. However, a negative consequence of ignoring was that SNS users often missed important information that was shared within their networks which, at times, resulted in hurt feelings. For instance, Gordon recounted how he felt when one of his close friends who was also in his Facebook network missed his posts about his daughter’s heart surgery:

> “She had so many friends that mine was just another post. It had obviously slipped through the cracks. It hurt a little bit thinking that, hey, I am reading your posts but you are not reading mine.” –Gordon, Restaurant Manager, 48

4.3.3 Blocking

Individuals who feel filtering and ignoring are not adequate coping mechanisms may escalate to blocking (Milgram 1970; Altman 1975). Interestingly, blocking is a feature that is explicitly built into most SNS interfaces. I characterized it as an interactional boundary mechanism; however, I found that individuals rarely took advantage of this feature. Instead, they develop more covert coping mechanisms for blocking unwanted interactions with others. For instance, Dollie and Alana use pseudonyms on Facebook even though Facebook encourages individuals to use their real names.

> "I changed my name because I was hiding. I wanted to be less able to be found. I changed my name, but it didn't work. Because then I realized that people were finding me under other people's names ...My sister was still able to find me." –Dollie, Mother, 34

Another way SNS users block interactions with others is by using someone else's Facebook account and never creating their own. Richard does not have an SNS account due to strict ethical standards of his career. He logs into his wife's Facebook account so that he can stay up-to-date with their mutual friends; Becky's husband benefits from her SNS interactions in a similar way:

> "My husband does not have a Facebook page. He doesn't understand why I check it all the time but does enjoy the 'gossip' when I tell him about recent updates. He sometimes asks me to check his sister's or brother's status to figure out where they are, if he can't get in touch with them ...(I think he just feels left out!)" –Becky, Elementary School Teacher, 29

Blocking through the use of pseudonyms or someone else's account can effectively remove unwanted social interactions while allowing one to still participate as part of an SNS. However, blocking as a coping mechanism often does not derive the same level of benefits enjoyed by others. Both Richard and Becky's husband (according to Becky) feel isolated from others by not having their own SNS accounts where they can be active participants. Richard consumes but does not post or interact with his friends on Facebook because it is not his own account. He joked that he may create an account for his dog so that he can have more interactions with friends without compromising his privacy.

> "I do feel left out when the majority of my personal friends are sharing their lives with each other online, and I am not included." –Richard, Architect, 31

Due to the high potential for boundary violations, four participants felt that proactive and retroactive blocking were not enough to protect them from negative

consequences. Therefore, they were forced to find ways to constantly monitor their outward-facing territories and confidant disclosures so that they could block any threats in as close to real-time as possible. Kristine used social aggregators such as TweetDeck to monitor her MySpace comments. Tyrone and Tia frequently checked Facebook from their mobile phones.

> "When I do get comments or tagging pictures or something that comes to my phone and says hey, so and so commented. If it is something that I am like 'this is not kosher,' then I can logon and delete that comment." –Tia, Administrative Assistant, 37

4.3.4 Withdrawal

Withdrawal is characterized as an "allocation of less time to each of the many inputs" (Milgram 1970; Altman 1975) in which an individual can interact or a general unwillingness to help others (Altman 1975). Individuals withdraw to distance themselves from perceived threats in order to avoid harm (Horney 1945). Participants showed evidence of withdrawal through self-censorship, detachment, and retreat. Seventeen, almost all, of the participants felt that they needed to censor what they shared within their SNS. Because most of them do not limit their sharing based on relationship context through the creation of friend lists or groups, they used the heuristic of only sharing what was appropriate based on everyone in their network seeing it. Therefore, self-disclosure was reduced to the lowest common denominator and stripped of personal intimacy.

> "There's certain things you maybe want to post about, but there's people on there that you maybe really don't want to know that, or you don't really want to share that with, so yeah, I've censored myself and/or not put things on there that I would have otherwise." –Nelson, Office Manager, 53

In this case, Nelson was unaware that he could limit the visibility of posts on Facebook to specific friend lists using existing controls. In other cases, individuals

censored themselves in the present out of fear that those interactions could persist and harm them in the future.

> "You don't want people to get things that they can hold against you. It's difficult because you post something and you are friends with someone, or a company you want to hire you comes and looks at it and then your relationship with that person or company changes and what was ok before isn't ok now." –Lorrie, Security Officer, 22

Therefore, many participants compensated for this by only accentuating the positive when sharing within their SNS. Eight participants said they suppressed any negative thoughts or feelings and only shared content they felt was positive or humorous. In fact, they frowned upon other people not doing the same.

> "Some people use it as a diary. I would not do that. I would not tell how I feel...if I say anything on my wall it is going to be either, one, that I am going to complement something that someone else already said ...or it's going to be something positive. I feel like I will never put anything that has negative energy on my wall." –Tyrone, Photographer, 31

Self-censorship reduced perceived social intimacy and emotional support from one's network and suppressed a sense of authentic self.

> "There are times when I am feeling sort of depressed, and I just want to share but I don't want to share it with everybody. That is where it becomes difficult because you want to share like you are sharing with your friends but not everyone is on equal footing so I do find myself sort of trying to speak in code sometimes or just hold back what I really am feeling." – Gordon, Restaurant Manager, 48

In addition to self-censorship, six SNS users managed their boundaries by carefully staying out of any conflict they observed between others. In a sense, this was their way of withdrawing by "shifting social transactions to others" (Milgram 1970; Altman 1975) and offloading the responsibility of managing conflict to others.

> "I don't usually interject myself in those kind of posts. I figure somebody's upset somebody but I really don't need to know about it." – Regina, HIV Awareness Coordinator, 60

However, when avoiding conflict was not a successful mechanism for maintaining their boundaries, some participants resorted to retreat. They created interactional boundaries of retreat through dropping off conversation threads, not logging in to their SNS, or even deactivating their account completely. For example, Gordon and Edward abandoned arguments that were started on Facebook for a time or indefinitely.

> "What I do is I just back off and try to come back to it later. And just say 'Ok, This conversation about the ethics of termination of unborn children is not a really a conversation I'm happy having right now. … I probably need to take a step back.'" –Edward, Youth Minister, 30

Kristine explained that she needed a break from her SNSs when she could not maintain a positive persona for her readers.

> "I do take Twitter Holidays or Twitter-cations where you don't go on for a while. Same thing with Facebook. Sometimes if I am feeling down or depressed, I don't want to go on Twitter and Facebook. One of the bad things about having all these people who are fans or whatever or that aren't family and friends, who are in a third category is that they expect you to be on and up and they don't expect you to have doubts or things like that." –Kristine, Author, 37

When Kurt was over stimulated by his SNS, he also chose to withdrawal from all interaction for a while.

> "Twitter I'm pretty much overwhelmed. So my way of dealing with it is pretty much basically been to kind of, I don't know, kind of run and hide. I'm kind of like ahhh too much information, I can't deal with it. I am ADHD to begin with, and that is one thing that happens with us, too much information causes well someone to want to run and hide pretty much, withdraw from the stimulus." –Kurt, dating coach, 32

Alana has deactivated and reactivated her Facebook and MySpace accounts on multiple occasions as she is generally ambivalent about online social networking, believing that its main purpose is to violate one's privacy.

> "I get on it to start off with, save all my good friends, even post updates to start off ...then my friends and I catch up in real life, have our girlfriend powwows and the pizazz of the site goes away. I don't use it, realize over

> and over that my most meaningful relationships benefit little from social networking, and I stray away from the site." –Alana, Substance Abuse Counselor, 28

Dollie deleted the offending Wall post where her friend congratulated her on her pregnancy, but because her confidant-disclosure boundary had been violated, she deleted her Facebook account entirely until months after her baby was born. Dollie believes that when Facebook becomes more of a nuisance than a positive social outlet, the best thing to do is to remove herself from it completely.

> "If I don't like Facebook, if I don't like being there, I could as easily get out of it. I can just delete the whole thing and leave. Delete is fabulous. I can delete you or delete myself and all my issues go away." –Dollie, Mother, 34

Self-censorship, detachment, and retreat are ways that SNS users withdraw from social interactions within SNSs, often when they feel there are no other ways to engage without being harmed. Withdrawal is an extreme coping mechanism for protecting oneself by limiting one's own behaviors in contrast to blocking which limits the actions of others. In both cases, social interaction is limited because the cost of interacting is perceived to be higher than the benefits.

4.3.5 Aggression

Filtering, ignoring, blocking, and withdrawal are all characterized as defensive coping mechanisms. However, some SNS users resort to offensive measures within their SNSs in order to hurt others. Aggression is a coping mechanism where individuals threaten those they perceive as a threat in order to protect themselves (Horney 1945). For instance, aggression due to social crowding in physical spaces may manifest as violence or verbal behaviors (Altman 1975). However, within SNSs, aggression is a coping mechanism that tends to be used to seek revenge in a covert yet public way, leveraging

outward-facing territories such as Wall posts. Interestingly, aggression within SNSs was a response to neurotic needs of acceptance and approval (Horney 1945) instead of social crowding (Altman 1975). SNS users leveraged aggression to get attention or enhance the level of social interaction within their networks, even if the interaction was negative. Seven participants explained using or having a friend use a status update to all of their friends as a way to retaliate against one particular person and garner attention or sympathy.

> "[My boyfriend's daughter] would make a comment on her Facebook page to look at it would be kind of general but then for us to read it to know what situation she's talking about it is like wait a minute why are you putting our business out on the street? It is more of a connotation, I am not saying your name, but I am talking to you." –Tia, Administrative Assistant, 37

Kurt went as far as to create a separate Facebook page and change his profile visibility to Friends of Friends in order to make his ex-girlfriend jealous and regret breaking up with him.

> "I had the bachelor of the year thing which was a good way to get back at her and say look, you gave this shit up. Now all your friends are going to see. They would say it why did you walk away from that he has all these other qualities and he is hot too?" –Kurt, Dating Coach, 32

Aggression also surfaced, at times, when SNS users enjoyed generating discussion and even causing conflict between their friends, possibly even pitting them against one another and intentionally converging one's network intersection boundaries. Regina, Larry, and Dollie often found entertainment value in starting political arguments on their Facebook Walls. Edward and Nelson often encouraged religious debates. Kurt, in general, liked provoking his audience as a means of personal promotion and even used them to bolster his own causes.

However, being the target or even just witness of others' aggression certainly has negative consequences. Having experienced some form of aggression in the past, participants tended to have a tainted view of SNSs as environments that breed drama and revert adults back to juvenile tendencies. Six participants emphasized the need to avoid the "drama" present within online social networks.

> "The site causes enough drama, as it is, or rather the people on the site using it in nefarious ways. Same thing for Myspace and all the others." – Allen, Technical Services, 31

4.3.6 Compliance

Compliance is a "self-effacing solution" to boundary turbulence and leads to sacrificing one's own needs to accommodate others and avoid harm (Horney 1945). Altman explained that individuals do this in response to "repeated failures to achieve a balance between achieved and desired levels of privacy" (1975). In some cases, individuals adjust their desired privacy level instead of trying to alter the social environment (Altman 1975). Often, compliance was implemented without any boundary discussion with others; therefore, adjustment towards more mutually acceptable boundaries would not occur in the future. Six participants admitted to adjusting their boundaries and relinquishing their interactional privacy needs to please others. This resulted in changing their disclosures, friending and unfriending preferences, and even their offline behaviors to account for the inevitable sharing within their social networks.

> "I am worried what people say or tag of me or whatever, so I do not engage in as many crazy drinking sessions with people who might not execute the best judgment when uploading, or the very least, marking who has access to view the more unsuitable photos. I do not say or do crazy things with my friends in town (usually) and keep some things I might normally share by my nature, to myself, so it doesn't end up on Facebook." –Allen, Technical Services, 31

Being able to properly maintain one's interpersonal boundaries is important for self realization and healthy relationship management (Horney 1945; Altman 1975; Katherine 1991; Petronio 2002). Therefore, over accommodation of others could result in a perceived loss of control over one's social interactions. As Allen admitted above, he feels that he cannot always be himself, even offline, due to the online interactions that may occur as a result.

4.3.7 Compromise

Many SNS behaviors I saw, as illustrated above, fit nicely within the coping mechanisms previously identified by Altman for dealing with stress in social environments (Milgram 1970; Altman 1975). However, Horney identified one "healthy" coping mechanism to meet neurotic needs that Altman did not mention. Compromise involves the interpersonal process of communicating, agreeing, disagreeing, compromising, and reaching mutual decisions (Horney 1945). In effect, compromise is the primary mechanism for regulating interpersonal boundaries instead of satisficing through compensatory actions. I observed boundary coordination through compromise in this study, but ironically, this coordination almost always happened external to the SNS environment – characterizing compromise most frequently as a coping mechanism instead of a technology-supported boundary mechanism. For instance, SNSs lacked the ability to signal one's privacy desires to co-owners of private information to ensure proper confidant-disclosure boundary coordination. Instead, SNS users found ways to use offline or private communication with others in order to coordinate boundaries beforehand (as a preventative strategy (Lampinen, Lehtinen et al. 2011)), and subsequently (as a corrective strategy (Lampinen, Lehtinen et al. 2011)). Participants

exhibited this coping behavior most frequently when posting and tagging photos on Facebook. Besmer and Lipford examined photo tagging and untagging behaviors in detail on Facebook (Besmer and Lipford 2010). In most cases, coordination happened before the photo was posted. Generally, people were very accommodating when it came to posting and tagging photos of others. However, photo tagging was also a point of contention where most participants said they had untagged a picture of themselves in the past. (Note: the interviews were conducted prior to Facebook's recent changes that allow tag review.)

> "I texted her and asked her if she wanted me to email her the pictures or did she want me to tag it? I wanted to tag it because I thought it was a hot picture. She said no no no you can't tag it, I am about to graduate . . . The shoot didn't show any nudity or anything. I think it was just really tight clothing, and it was really sexy but she did not want that to get out. She said that no do not ever tag me and that image." –Tyrone, Photographer, 31

I also observed offline boundary compromise when setting relationship connection boundaries. Becky and Dollie told co-workers in person that they did not accept friend requests from co-workers so as to manage their expectations.

> "I don't want to have coworkers on my page … I would say it at work, 'oh no, don't send me a friend request because I don't allow coworkers on my page.'" –Dollie, Mother, 34

When SNS users were confronted with interpersonal conflict or negative social interactions, they made a point to take the interaction off of outward-facing territories to other more private mediums. It was important to participants to not allow interpersonal conflict to be visible to everyone within their networks. Communication was initiated either through the SNS's private email messaging capabilities or by more direct communication such as calling or face-to-face conversations. While the primary response to conflict was to withdraw, an alternative strategy 13 SNS users employed was private

confrontation for reconciliation. However, the effort to reach a compromise or truce was reserved for close friends as opposed to acquaintances. A benefit of this approach, however, was that SNS users were often able to resolve misunderstandings instead of ending the relationship or propagating drama within their SNSs.

> "If it [conflict occurring] was just in my news feed, I would filter them out, if it was on my wall, I would probably just unfriend them unless they were a close friend, then I would ask them to stop." –Fred, Sales Manager, 33

4.4 Discussion

I presented a framework of SNS coping strategies by identifying analogous online behaviors to theoretically based, offline coping mechanisms. Filtering, ignoring, blocking, withdrawal, aggression, compliance, and compromise are all strategies SNS users have developed in an attempt to achieve their desired level of privacy and social interaction outside of the use of traditional SNS privacy controls. TABLE 8 summarizes the types of coping mechanisms, gives a specific example, and relates the example to types of interpersonal boundary management.

TABLE 8: Summary of Coping Mechanisms

Coping Mechanism	Example (Boundary Type)
Filtering	Creating two separate SNS profiles to segregate different circles of friends (Relationship Context)
Ignoring	Skimming or ignoring one's News Feed (Inward-Facing Territorial)
Blocking	Using a pseudonym so that others cannot find oneself (Interactional/Relationship Connection)
Withdrawal	Censoring oneself (Self- Disclosure)
Aggression	Intentionally starting arguments between one's friends (Network Intersection/Outward-Facing Territorial)
Compliance	Accepting almost all friend requests and rarely unfriending (Relationship Connection)
Compromise	Confirming that it is okay to tag someone in a picture (Confidant-Disclosure)

Such adaptations suggest, first, that social interactions through SNSs frequently cause emotional distress that users feel the need to mitigate. Second, it suggests that SNS environments are not optimally designed to be responsive and flexible to SNS user privacy needs. Third, such coping mechanisms tend to produce sub-optimal social outcomes such as neurotic tendencies (Horney 1945) and additional stress. With the exception of compromise, these coping strategies tend to be maladaptive, where short term stress may be decreased but potentially at the cost of increasing long term stress (Horney 1945). For instance, feeling like you constantly have to monitor your SNS, participate using a pseudonym, or even change your offline behavior due to potential SNS interactions are generally not beneficial coping behaviors and can be stressful in and of themselves.

As an example, Dollie, who is an extreme filterer when it comes to relationship connection boundaries (not allowing family or coworkers into her network) does so because she has been hurt in the past. She only has 62 Facebook friends and unfriends often in order to avoid conflict or compromise. However, this coping behavior reduces her opportunity to forge deeper relationships with these individuals through her SNS at any point in the future. Individuals like Kurt and Tyrone, who use their SNSs for professional marketing, often ignore their News Feed, or inward-facing territories, due to the sheer volume of status updates from their extremely large networks, and miss important updates from true friends. Therefore, while they welcome others to interact with them, they rarely engage others in the same level of interaction in return, possibly making others feel ignored or unimportant. Individuals who withdraw emotionally

through self-censorship tend to express a dissatisfaction of not being able to present an authentic self to others and feel a reduced sense of intimacy within their SNSs.

Understanding SNS coping mechanisms can help pinpoint areas where improved interface design can potentially enhance online social interactions. These findings can inform design guidelines that can improve SNS interface support for interpersonal boundary regulation. For instance, SNSs could support one's relationship connection filtering process by requiring more information as to the motivation one wants to connect with another. This would have saved Gordon from significant emotional torment when a high school bully friend-requested him on Facebook.

> "He used to bully the shit out of me in high school. I am looking at him, and I am thinking, why in the world would he send a friend request to me when he tortured me in high school? I really struggled over it, and I was about to decline him actually. I decided to say yes, to see what's going on ...the next day he sends an email in which he apologizes for the grief that he gave me through high school." –Gordon

SNS interfaces would also benefit from better inward-facing territorial boundary support to reduce cognitive overload from updates streaming in from one's friends. For instance, many Facebook users reported frustration that Facebook controls who they see in their News Feed instead of allowing them to do so themselves. Because SNSs often take control of boundary regulation for end users, they have to find ways to regain control. For instance, when Edward wants to see a particular friend show up in his Facebook News Feed, he makes sure to post a comment on their Wall so that the recent interaction bumps them into his Top News. To address this problem, in September 2011, Facebook just rolled out a change to filter one's News Feed by different friend lists.

Overall, the biggest gap this study highlights in SNS interface design for boundary regulation support is a lack of built-in capabilities to compromise by actively

negotiating one's boundaries with others. SNS users are forced to use communication mediums outside of the SNS interface to coordinate interpersonal boundaries with others. Therefore, the SNS environment is not responsive to these needs. SNS interfaces, such as Facebook, are designed to encourage sharing and being open, and de-emphasize boundary coordination. For instance, many of the participants expressed anguish over having no closure from being unfriended. SNSs do not notify and certainly do not facilitate communication to explain why the relationship was severed or attempt to reconcile conflict. There also are no tools for explicitly signaling or collaboratively negotiating disclosure for co-owned information such as pictures and tags. SNS users have to resort to external coordination though such means as private messaging or face-to-face conversations. By integrating this negotiation process into SNS interfaces in positive ways, it could facilitate and make online boundary regulation a more socially acceptable process.

4.5 Summary

Now that individuals are interacting online instead of merely sharing information asynchronously, it is important to reapply existing psychology of social interaction and behavior to virtual, social environments. This research applied social theories of interpersonal boundary regulation through boundary and coping mechanisms to the unique social environments of SNSs. I found that filtering, ignoring, blocking, withdrawal, aggression, compliance, and compromise represent coping mechanisms individuals use within SNSs to maintain their interpersonal boundaries. In many cases, coping and incongruent boundary mechanisms created sub-optimal social networking

experiences or introduced unnecessary complexity, which in turn reduced end user satisfaction with the SNS and negatively impacted their social interaction with others.

Hence, when SNS users employ coping strategies, this can signify opportunities for improved interactional interface design. Integrating, improving, or realigning boundary mechanisms supported by SNS interfaces could actually enhance relationship development. Privacy through effective interpersonal boundary regulation serves as a way to improve how individuals connect and share with others. Interpersonal boundary regulation through compromise can increase one's level and quality of engagement through SNSs. Therefore, SNS interface design that supports the complexities of the interpersonal boundary regulation process could serve to improve, instead of prevent, higher levels of social interaction. Next, I will discuss the interpersonal boundary regulation process for SNSs in more detail.

CHAPTER 5: A THEORETICAL FRAMEWORK OF INTERPERSONAL BOUNDARY REGULATION WITHIN SNSS

Now that the mechanisms, both technology-supported and coping, for interpersonal boundary regulation within SNSs have been identified, the next step is to incorporate them into a cohesive, theoretical framework of interpersonal boundary regulation. Based on a culmination of the literature and the interviews, I have created a theoretical framework for interpersonal boundary regulation within SNSs. The key components of interpersonal boundary regulation within SNSs include: individual differences, awareness, desired privacy level, boundary negotiation, and privacy outcome (FIGURE 2). In addition, through this research, I explore the relationship between particular privacy outcomes and social networking outcomes such as social capital, social connectedness, and self-esteem. The remainder of this chapter will step through the SNS interpersonal boundary regulation process and define salient constructs. Chapters 6 and 7 will serve to quantitatively validate some of the key relationships between the constructs.

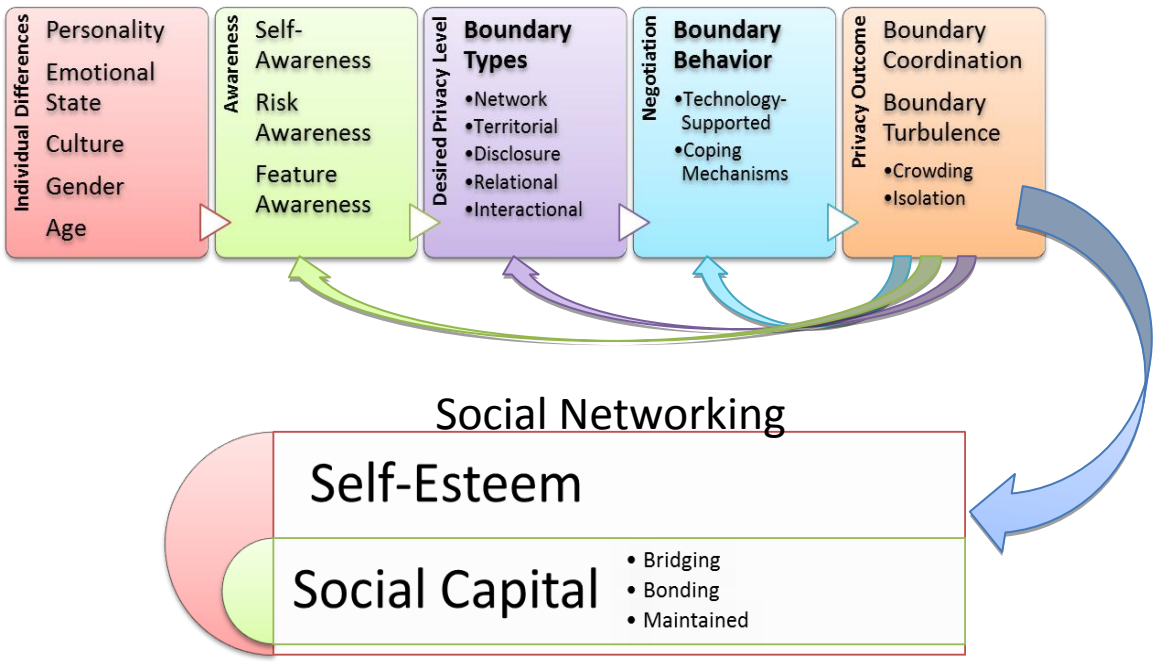


FIGURE 2: Theoretical Framework of Interpersonal Boundary Regulation within SNSs

5.1 Individual Differences

"Individuals use certain criteria such as cultural expectations, gender, motivation, context of situation, and risk-benefit ratio to establish privacy rules," according to Petronio (Petronio 2002). One's "desired level of boundary regulation" is "derive[d] from a combination of personal, interpersonal, and situational factors" (Altman 1975). Many of the rules for interpersonal boundary regulation derive from contextual factors or individual characteristics. Personal factors include experience, personality, and biography. Interpersonal factors may include group cohesion and structure. Situational factors could include environmental properties or task demands (Altman 1975). A plethora of individual characteristics have been related to boundary regulation. Whitfield mentions humility, hyper vigilance, compassion, fear of abandonment, low self-esteem, control, trust, dependence, grieving, tolerance, assertiveness, and aggression (1993). Altman discussed anxiousness, extroversion, introversion, authoritarianism, dominance,

birth order, stress, culture, vulnerability, and mood. For instance, Altman suggested that individuals who exhibit a high level of dominance may be more territorial; individuals who are more anxious or stressed tend to be more distant (1975). Petronio included cultural expectations, gender, motivation, loneliness, stress, and Machiavellianism. For instance, lonely people are less likely to disclose personal information (Petronio 2002). While I cannot cover all individual differences and experiences that culminate in rule acquisition for boundary regulation, I have attempted to cover some of the most over-arching and relevant characteristics. The contextual factors that I feel will effect rule development for boundary regulation are personality, emotional state, culture, race, gender, and age. I will briefly discuss these characteristics as they relate to boundary regulation.

5.1.1 Personality

Personality is one of the fundamental characteristics of an individual that researchers have measured (or attempted to measure) for decades. Controversy remains over the different dimensions of personality. However, the "Big Five" personality dimensions became a first consensus among many researchers as a standard taxonomy of personality traits. The five dimensions used in this taxonomy are Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness (Gosling, Rentfrow et al. 2003; John 2008). Though I have not formulated formal hypotheses for how these traits may influence boundary regulation, it is reasonable that they will have an impact given prior research. For example, Altman suggested that extroverts adopt a closer personal space than introverts (1975) which may equate to more open territorial boundaries.

5.1.2 Emotional State

Stress, anxiousness, vulnerability, loneliness, and mood are documented as contributing factors that affect private disclosures (2002) and one's desired privacy level (Altman 1975). Such individual characteristics can be grouped as one's emotional state. Other researchers have determined that the two most salient characteristics of emotional experience or mood are Positive Affect (PA) and Negative Affect (NA) (Campbell, Trapnell et al. 1996). PA is the extent to which an individual feels "enthusiastic, active, and alert" (Watson, Clark et al. 1988). Meanwhile, NA "is a general dimension of subjective distress and unpleasureable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness" (Watson, Clark et al. 1988). PANAS has been measured in SNS research as it relates to social capital and self esteem (Burke, Marlow et al. 2010), but it has not been captured as a factor in SNS privacy research previously.

5.1.3 Culture, Ethnicity, Gender, and Age

Culture or ethnicity largely affects the social norms that individuals use to develop boundaries. For instance, more individualistic cultures tend to desire higher levels of privacy than collective cultures (Petronio 2002). Many researchers have studied the differences between Western and Eastern cultures and found notable differences (Markus and Kitayama 1991; Kashima, Yamaguchi et al. 1995). These differences have been described as two different self construals: individualism and collectivism (Kashima, Yamaguchi et al. 1995; Oyserman, Coon et al. 2002). The individualistic of independent construal is epitomized by Western culture with an emphasis on the separateness of distinct individuals. Behavior is driven by "one's own internal repertoire of thoughts,

feelings, and actions of others" (Markus and Kitayama 1991). In contrast, collective or interdependent cultures (usually associated with the Eastern hemisphere) focus on connectedness of individuals:

> "Experiencing interdependence entails seeing oneself as part of an encompassing social relationship and recognizing that one's behavior is determined, contingent on, and, to a large extent organized by what the actor perceives to be the thoughts, feelings, and actions of others in the relationship" (Markus and Kitayama 1991).

Past research has found differences in concerns for information privacy based on cultural differences (Bellman, Johnson et al. 2004; Xu, Dinev et al. 2008). For instance, cross-cultural differences in desired privacy level and perceptions of crowding were found between American and Turkish students (Kaya and Weber 2003). Within SNS research, ethnicity played a role as MySpace researchers found that white Anglo students were more likely to disclose their real names, romantic status, and interests while African American students were more likely to disclose their religion (Tufekci 2008). White college students on Facebook exhibited higher levels of bridging social capital than non-white students (Ellison, Steinfield et al. 2007).

Gender differences are also reflected in privacy and interpersonal boundary decisions. Research has found statistically significant differences between men and women on the prerequisites necessary for self-disclosure. Women place a higher level of importance on sender and receiver characteristics. Women emphasize the importance of a receiver to be "discreet, trustworthy, sincere, liked, respected, a good listener, warm, and open" (Petronio, Martin et al. 1984). As for the sender of a disclosure, women value honesty, willingness to disclose, and sincerity more so than men. Research also suggests that women tend to disclose more than men (Petronio, Martin et al. 1984) and in different ways. Women are more relational than men, but men develop more cohesive groups

(Kashima, Yamaguchi et al. 1995). Other research suggests that men desire a higher level of privacy than women (Kaya and Weber 2003). When looking at gender differences within SNSs, Thelwall and Uppal found that female MySpace users made significantly more positive comments to their friends than males (Thelwall, Wilkinson et al. 2009). Other research found that men were significantly more likely to make their MySpace profile visible to everyone on MySpace than women and three times more likely to disclosure their phone number. However, men were more likely than women to think about government or corporate entities viewing their profiles (Tufekci 2008). Based on these differences, I believe that gender is an important contextual factor for interpersonal boundary regulation.

Age may also play a role in boundary regulation within SNSs. Because younger individuals tended to adopt online social networking more quickly than older individuals, some research suggests that younger SNS users are more comfortable sharing and disclosing than older SNS users (Gross and Acquisti 2005; Stutzman 2006; Ellison, Steinfield et al. 2007; Tufekci 2008). "It seems that the younger students are more political, more comfortable with sexual orientation, more motivated for publicity, and more willing to give up their privacy" (Tufekci 2008). Tufekci suggests that this may be because the desire to be seen or known outweighs the desire to protect (Tufekci 2008). However, adults may also react differently to boundary signals. For instance, older SNS users tend to not get as emotionally invested in the process of "friend ranking" as younger ones (boyd 2006).

In summary, personality, emotional state, culture, ethnicity, gender, and age are all contextual factors that represent individual differences that contribute to unique

privacy boundary preferences when individuals prepare to engage in boundary negotiation.

5.2 Awareness

Although awareness is an individualistic phenomenon, I chose to separate it from the individual differences outlined above for two reasons. First, personality, emotional state, culture, ethnicity, and age are individual differences that cannot be manipulated or changed whereas awareness can be altered due to outside influences. Second, awareness is an increasingly important construct in the empirical studies I will be discussing in the upcoming chapters. At least some level of awareness is a prerequisite for interpersonal boundary development (Whitfield 1993). This includes both awareness of oneself and one's environment. I have identified three types of awareness necessary for the SNS boundary process: self-awareness, risk awareness, and feature awareness.

5.2.1 Self-Awareness

Self-awareness is defined as a realization of one's "beliefs, thoughts, feelings, decisions, choices, and experiences," (Whitfield 1993) and thus becomes important when individuals develop their interpersonal boundaries with others. A key aspect is the awareness of what one shares. "Presence" or boundary awareness is one of the key characteristics of boundary development (Whitfield 1993). Self-awareness is often differentiated in the literature into public self-awareness and private self-awareness. "Public self-awareness involves attention to oneself as a social object" (Prentice-Dunn and Rogers 1982). This includes "concerns about one's appearance in social situations" (Sassenberg, Boos et al. 2005). Private self-awareness, on the other hand, has an inward

focus “on personal, more covert aspects of oneself such as perceptions, thoughts, and feelings” (Prentice-Dunn and Rogers 1982).

SNS privacy research, to my knowledge, has not determined the relationship of self-awareness on boundary development or information disclosures. The closest research that is relevant deals with disclosures within computer-mediated communication (CMC) mediums. Two major yet diverging perspectives have developed on the impact self-awareness has in CMC. First, some researchers believe that CMC reduces social cues and reduces overall self-awareness causing deindividuating effects that lead to impersonal tendencies. Deindividuation occurs when an individual loses sight of one’s individuality. Prentice-Dunn and Rogers studied the effects of self-awareness on deindividuation or aggression. They found that attentional cues (focusing the attention either towards the individual or externally) impact private self-awareness. External attentional cues heightened aggression. Meanwhile, accountability cues (focusing on accountability to a set of social standards) heightened public self-awareness and decreased deindividuation (Prentice-Dunn and Rogers 1982). Another stream of research examined the effect of CMC on self-awareness. CMC was found to heighten private self-awareness which lowers attitude change thereby leading to less interpersonal influence and more conflict than face-to-face (FTF) communication. However, this was only true of individuals with high trait private self-awareness, the tendency of an individual to focus inwardly (Sassenberg, Boos et al. 2005). Another study also confirmed that CMC significantly increased acute private self-awareness while marginally lowering public self-awareness. Individuals with lower public self-awareness tended to evaluate their social context more negatively (Matheson and Zanna 1988). Conversely, the hyperpersonal perspective posits

that the "visual anonymity" of CMC creates an opportunity for more favorable impressions leading to greater levels of intimacy than within FTF interactions (Yao and Flanagin 2006).

5.2.2 Risk Awareness

Risk can be defined as "uncertainty resulting from a potential for a negative outcome" that can result in personal loss (Xu, Dinev et al. 2008). Risk awareness is another component of awareness that is relevant to interpersonal boundary regulation within SNSs. If SNS users are not aware that potential boundary violations could occur or their ramifications, they would be less likely to vigilantly defend that boundary from potential violations. Petronio described the negative consequences from private disclosures in terms of risk level or type. High-risk disclosures can result in shame, threat, or severe embarrassment. Moderate-risk disclosures may cause discomfort or aggravation, and low-risk disclosures may result in white lies or conflicting opinions. Other risks associated with opening one's boundaries could include stigma-risk, face-risk, relational-risk, and role-risk (Petronio 2002). Olivero and Lunt found that perceived risk reduces the level of trust and increases the demand for control within e-commerce exchanges when retailers request consumers to disclose personal information (2004). Therefore, perceived risk is a factor when SNS users make boundary regulation decisions.

5.2.3 Feature Awareness

Social interactions within SNS environments are fully mediated by the technological interface; therefore, feature awareness plays a crucial role in boundary negotiation. According to Altman, "environmental awareness and environmental-usage

training might help people better use, shape, and reshape their environments" (1975). Feature awareness is defined as the degree of user knowledge about or recognition of a particular interface feature or functionality necessary to perform a given task (Findlater and McGrenere 2010). Awareness of functionality is a major issue in the learnability of any interface which impacts usability and ultimately a user's ability to effectively interact within the environment or achieve desired outcomes (Grossman, Fitzmaurice et al. 2009). Feature awareness is vital within SNS environments because employment of boundary mechanisms often directly depends on the ability to utilize SNS interface controls effectively. According to Facebook's Site Governance, "At Facebook, we are constantly developing new experiences and features to help you control your information. . . . However, there is more to controlling your information than just settings. It's also important that you understand how information is used and what your choices are" (Faceboook 2011). Unfortunately, SNS privacy settings are often too complex for SNS users or change so quickly that it is hard for them to keep up. I experienced this problem first-hand during the interface analysis as SNS interfaces completely changed within a matter of months and with no notification. I also saw this was the case in the SNS user interviews. If SNS users do not know that an SNS interface control is available for boundary regulation, then it will not be employed. In the interviews, a majority of participants lacked awareness of interface controls provided by SNSs for boundary regulation.

5.3 Desired Privacy Level and Privacy Negotiation Behaviors

In Altman's model, one's desired level of privacy is the optimal goal one tries to achieve at a given time for his or her need of interaction with others (Altman 1975).

Boundaries are not static; instead, they change over time and circumstance. Past research established that desired privacy level is negatively correlated with extraversion, sociability, and self-disclosure and positively correlated with shyness and loneliness (Harrison 1993). Harrison developed a scale to measure an individual's desired privacy level and noted that "it is not assumed that all individuals with a strong desire for privacy desire all forms of privacy equally" (Harrison 1993). I found that this also held true for the boundary types I presented in the taxonomy. Different SNS users had distinct profiles for managing their boundaries, desiring high and low privacy levels across different boundary types. For instance, an individual may desire a high level of disclosure privacy and low levels of relational privacy. In other words, this person may not want any personal information shared within his or her network but wants to have a large network comprised of both strong and weak ties. This would be like Kristine, the young adult author, who "blanket accepts" friend requests but does not disclose anything personal within her SNS. Inversely, an individual may desire low levels of disclosure privacy yet high levels of relational privacy. This would be like Dollie, a stay-at-home mother, who says whatever she likes within her SNS (from vulgar language to strong political opinions), but does not let family or co-workers into her social network and keeps her friend list as small as possible. Because desired privacy level can vary by individual across boundary types, I created measures of desired privacy level across each of the ten boundary types for the quantitative studies in Chapters 6 and 7.

The negotiation stage occurs when the different interpersonal boundary mechanisms (defined in Chapter 2) are mobilized in combination in attempt to achieve one's desired privacy level. Individuals employ different boundary mechanisms at

different times, at different levels, and in different combinations to achieve their desired level of privacy (Altman 1975). Mechanism deployment is very dependent on the individual. For instance, past research found that college students are better at managing disclosure boundaries through profile visibility than managing the disclosures themselves (Tufekci 2008). Both desired privacy level and boundary negotiation behaviors can vary by different boundary types. I found that different SNS users have different styles when choosing mechanisms to regulate their interactions. These strategies included both technology-supported and coping mechanisms.

Given the different types of privacy boundaries, it is important that the boundary of mechanism of choice supports the privacy goal SNS users are trying to achieve. However, this is not always the case. I observed that it was often the case that SNS users implemented boundary mechanisms that did not specifically meet their privacy goals. I call this incongruent boundary negotiation given a boundary goal. For instance, if someone is not one's friend, a congruent boundary mechanism would be to unfriend them. Thus, an appropriate relationship connection boundary would be established. However, a common incongruency I observed was when SNS users crossed relationship connection boundaries with inward-facing territorial boundaries. Quite a few participants hid someone from their News Feed who was no longer a friend, while others unfriended a real friend due to an annoyance such as over-posting. In most cases, when a boundary mechanism was incongruent with the boundary goal, it also created potential for negative consequences. For instance, hiding someone still allows that person access to one's network, personal disclosures, and future interactions. Inversely, unfriending someone who is truly a friend removes the possibility of future interactions that could strengthen

the relationship, and could even harm the relationship by emotionally hurting the other person. Therefore, both desired privacy level and privacy negotiation behaviors within SNSs need to be captured with respect to the different boundary mechanism types defined in the taxonomy. This will give us a better understanding of intent, behavior, and the fit between the two.

5.4 Privacy Outcomes

In optimal cases, boundary negotiation results in boundary coordination; however, individuals do not always achieve their desired level of social interaction which results in "boundary turbulence" (Petronio 2002) or a boundary violation (Altman 1975; Katherine 1991). Three privacy outcomes are possible; Individuals can achieve their optimal desired privacy level, become crowded, or be left feeling isolated given their actual level of social interaction. Crowding occurs when one becomes over stimulated from undesirable levels of social interaction. Inversely, isolation can also be a result of improper boundary regulation when an individual receives less social interaction than intended (Altman 1975). These types of "distance violations" can occur "when intimacy is less than what is appropriate to the relationship" (Katherine 1991). Generally, there are three causes of boundary asynchrony: intentional violations, mistakes, and fuzzy boundaries (Petronio 2002). Both crowding and isolation are considered boundary violations and can result in a variety of negative outcomes including physical, physiological, and psychological stress; vulnerability, illness, anxiety, embarrassment, anger, bewilderment, discomfort, flight reactions, anger, and more (Altman 1975). Boundary violations can have extreme consequences from abandonment to abuse (Katherine 1991). Privacy outcomes can, in turn, affect other aspects of the interpersonal boundary regulation process. Due to

negative privacy outcomes, an individual's awareness may be heightened, their boundary rules modified, or their boundary mechanisms adjusted to be more effective. In this way, the entire interpersonal boundary regulation process is iterative in nature.

5.5 Social Networking Outcomes

SNS privacy research often assumes that optimal social networking outcomes (sharing and connecting with others) are negatively associated with privacy outcomes (framed as restricting information disclosure). However, my theoretical framework of interpersonal boundary regulation within SNSs does not make this assumption. In fact, I propose that optimal privacy outcomes (framed as receiving one's desired level of social interaction) are directly related to positive social networking outcomes. Interpersonal boundaries help individuals achieve self-worth, self-esteem, self-respect, self-freedom, self-identity, emotional release, self-evaluation, self-observation, identity differentiation, independence, autonomy (Altman 1975; Whitfield 1993), self-expression, and self-clarification (Petronio 2002). Thus, boundary regulation is essential for personal growth and the development of fulfilling relationships. Both increased self-esteem (Ellison, Steinfield et al. 2007; Steinfield, Ellison et al. 2008) and higher social capital (Williams 2006; Ellison, Steinfield et al. 2007; Steinfield, Ellison et al. 2008; Jiang and Carroll 2009; Burke, Kraut et al. 2011; Ellison, Vitak et al. 2011; Koroleva, Krasnova et al. 2011) are positive outcomes often related to social network use.

5.5.1 Self-Esteem

Self-esteem is an individual's inner thoughts and feelings regarding one's own worth (Rosenberg 1989). Altman related self-esteem to one's ability to regulate privacy boundaries (Altman 1975). "When one has a clear sense of boundaries between inside

and the outside, one is able to develop healthy self-esteem based on a sense of autonomy" (Paine-Gernee and Hunt 1990). SNS research often evaluates self-esteem when measuring social capital (Burke, Marlow et al. 2010; Ellison, Steinfield et al. 2010) and suggests that Facebook usage provides greater benefits to college students who have low self-esteem and low life satisfaction (Ellison, Steinfield et al. 2007). Since a main function of boundary regulation is to help define self from other and a key motivation to use SNSs is to display personal identity and for self promotion (boyd 2006; Hogg, Wilkinson et al. 2008), I believe there is a positive relationship between achieving one's desired privacy level and self-esteem. In addition, boundary violations can negatively impact one's self-esteem as seen in cases of cyber-bullying.

5.5.2 Social Capital

Social capital is one of the most prevalent constructs represented in SNS research (Williams 2006; Ellison, Steinfield et al. 2007; Valenzuela, Park et al. 2008; Jiang and Carroll 2009; Valenzuela, Park et al. 2009; Ellison, Steinfield et al. 2010; Ellison, Vitak et al. 2011; Koroleva, Krasnova et al. 2011). Social Capital is a benefit of social networking that is derived from the development and maintenance of relationships with others (Williams 2006; Koroleva, Krasnova et al. 2011). Social capital benefits can include "emotional support or the ability to mobilize others" (Williams 2006). Williams developed an "Internet Social Capital Scale" (ISCS) through an in-depth review of the literature and statistical validation of the emergent dimensions of social capital. Overall, social capital varied along two dimensions: bridging and bonding; online and offline. Bridging social capital refers to the resources gained through connections with weak ties or acquaintances whereas bonding social capital deals with more intimate relationships

such as those between actual friends and family (Williams 2006; Ellison, Steinfield et al. 2007). Ellison et al. expanded these dimensions to add maintained social capital. Maintained social capital is present when virtual networks allow individuals to stay connected with others when physical distance would otherwise sever or weaken the relationship (Ellison, Steinfield et al. 2007). Koroleva et al. differentiated between the sources and benefits of social capital specific to the SNS environment. Sources included network structure and social connectedness (defined in previous section); benefits included horizon broadening, networking value, emotional support, and offline participation (Koroleva, Krasnova et al. 2011). Network structure dealt with "expansion and diversification" of one's network. Horizontal broadening refers to increasing the range of one's knowledge and experiences. Networking value is the tangible value from having "access to the resources contained in the networks of others" (Koroleva, Krasnova et al. 2011). Emotional support is the comfort one can receive from those in one's network, and offline participation is the increased participation in offline social activities (Koroleva, Krasnova et al. 2011). Ellison et al. and Koroleva et al.'s measures for social capital have been adapted to the context of Facebook (Ellison, Steinfield et al. 2007; Koroleva, Krasnova et al. 2011).

Quite a few studies have found relationships between various SNS variables and social capital. For instance, Facebook usage is significantly and positively correlated to increased levels of social capital while general Internet usage does not contribute to social capital (Ellison, Steinfield et al. 2007). However, later research clarified that only social information-seeking behaviors, not initiation of new relationships or maintaining existing relationships, on Facebook lead to the creation of social capital. Also, active

contributions as opposed to passive consumption contributed to social capital (Ellison, Steinfield et al. 2010). The number of actual friends a Facebook user has is positively correlated to social capital but exhibits diminishing marginal returns as the number of friends becomes too high (Ellison, Steinfield et al. 2010). Only one study, to date, has focused on the relationship between privacy and social capital. Facebook researchers found that the use of advanced privacy settings was positively correlated with higher levels of perceived social capital (Ellison, Vitak et al. 2011). Therefore, this is evidence that more positive interpersonal boundary regulation outcomes can positively impact social capital.

5.6 Summary

Through the delineation of different SNS boundary types, examination of coping mechanisms, and development of a theoretical model of interpersonal boundary regulation within SNSs, I made the following notable contributions: First, I expanded the scope of privacy within the context of SNSs to include multiple types of privacy boundaries beyond personal information disclosure. I did this through a two-fold approach; I examined five different SNS interfaces and interviewed 21 SNS users. Second, I categorized and compared SNS interface controls based on the boundary mechanism in which they supported. Third, I differentiated between these technology-supported boundary mechanisms and coping mechanisms. I found that existing social theory on coping could help us frame specific SNS coping behaviors and pinpoint areas for improved design. Fourth, I couched the findings about SNS boundary mechanisms in a theoretical model for the interpersonal boundary regulation. The theoretical model is consistent with Altman's conceptualization of privacy as a boundary regulation process.

I incorporated salient constructs that emerged during the review of the literature and SNS user interviews. I discussed past findings that related each of these constructs to one another and components of the boundary regulation process. I also theorized a relationship between privacy outcomes from the boundary regulation process and social networking outcomes. This is the first comprehensive model of SNS interpersonal boundary regulation that is grounded in social psychology theory, refined through empirical qualitative analysis, and to be subsequently validated through quantitative methods in Chapters 6 and 7.

CHAPTER 6: UNPACKING THE 'PRIVACY PARADOX'

Referring back to the theoretical framework, this chapter focuses on the relationship between SNS users' desired privacy level and their actual boundary negotiation behaviors. One recurring theme in SNS privacy research is the "privacy paradox," where end user privacy concerns are not reflected in their actual SNS privacy behaviors (Acquisti and Gross 2006; Barnes 2006; King, Lampinen et al. 2011). This finding is contrary to the widely accepted theory of planned behavior that states intent is the strongest predictor of actual behavior (Fishbein 1975). In addition to the role of desired privacy level on privacy behaviors, I examine the impact of three types of awareness (self-awareness, risk awareness, and feature awareness) and burden on privacy behavior. I provided definitions and detailed discussion for each construct tested in this model in Chapter 5. Therefore, in this chapter, I discuss how I operationalized each of these constructs and formally hypothesize some potential relationships between the constructs.

6.1 Research Model and Hypotheses

6.1.1 Desired Privacy Level

Desired privacy level was operationalized as the desire to open or close oneself with respect to the different types of interpersonal boundaries defined in the earlier taxonomy (relationship connection, relationship context, network discovery, network intersection, territorial inward-facing, territorial outward-facing, self-disclosure, confidant disclosure, interactional disabling, and interactional blocking). Based on my

theory development, overall desired privacy level is a formative construct (Freeze and Raschke 2007) derived by the ten different types of privacy boundaries identified in the taxonomy. The individual dimensions of desired privacy all influence overall desired privacy but they are not necessarily expected to be correlated with one another. For example, one could have high desired privacy for relationship connection but low desired privacy for network discovery. As such, each privacy dimension was modeled as a reflective construct where the individual measures all represent the underlying construct and are expected to be correlated (Freeze and Raschke 2007). To do this, I compiled a list of initial item pools to measure each dimension based on quotes from interviews and the review of the literature. I simplified the item wordings and removed redundant items. Following the "rule of three (Freeze and Raschke 2007)," I chose three items to measure each of the ten boundary types.

Although the qualitative findings found overlap in some of these dimensions, it was difficult to leverage axial coding to identify exactly how each of these dimensions related to one another. One basic relationship I identified, for instance, was the five higher order categories (relationship, network, territorial, disclosure, and interactional). I also noted in the earlier discussion that the technology-supported mechanisms for managing one's boundaries for relationship context and network intersection were virtually the same (creating groups or lists), as well as the technology-supported mechanisms for managing outward-facing territories and confidant disclosures. So, while I predict overlap between these dimensions, I operationalized them independently so that future quantitative analysis could help clearly identify these relationships. In this study,

however, I performed confirmatory analysis on each of the ten boundary types individually to reflect the ten boundary types represented in the current theory.

To pre-validate the measures of the different types of SNS desired privacy (10 dimensions x 3 items = 30 items) for discriminant validity, I applied established q-sorting (card sorting) techniques (Moore 1991; Straub 2004). I performed five rounds of card sorting where participants were asked to electronically sort items into pre-defined categories using Optimal Sort from OptimalWorkshop.com (OptimalWorkshop.com). Unique participants were recruited through Facebook for each round, and items were revised subsequent to the round. For rounds one through four, participants were given all ten dimensions at once to categorize. However, based on participant feedback, they were overwhelmed by the large number of categories. Therefore, in round five, I chose six categories for each of four separate rounds of card sorting. The individual accuracy rates for round five were 71%, 79%, 77%, and 92%; the average of these four rounds is shown in the table below. The hit rates for each round are presented in TABLE 9. These accuracy rates suggested adequate initial construct validity for SNS desired privacy level to move forward.

TABLE 9: Card sorting accuracy rates

Round	Accuracy Rate	# of Participants
1	53%	6
2	71%	5
3	69%	10
4	71%	10
5	79%	40

In TABLE 10, I also examined the common card sort cross-loadings (greater than 10% of the occurrences) between the dimensions which gave us some interesting insights. Dimensions that were in the same higher level category tended to cross-load. Most cross-loadings within the same higher level category ranged from 8% to 13% frequency which validates the original groupings but is not high enough to justify collapsing them into one dimension. For example, disabling was classified as blocking 12% of the time, and the taxonomy grouped both under interactional boundaries. However, one high (24%) cross-loading suggested that relationship connection could possibly be an aspect of relationship context instead of its own dimension. Also, relationship context was missclassified as network intersection 14% of the time. This finding was consistent with the qualitative analysis which noted that both relationship context and network intersection were managed using the same SNS interface controls, primarily creating groups or lists of friends. Thus, I believe this further validates the results I presented earlier in the taxonomy. Desired privacy level will represent an exogenous, latent variable in the model (Byrne 2012) and was measured on a 7-point Likert scale from “Strongly Disagree” to “Strongly Agree.” See Appendix A for the full item scales.

TABLE 10: Card sorting cross-loadings

Categories	Dimension	Cross-loaded Dimension	Frequency
Relationship (Same)	Connection	Context	24%
Relationship-Network	Context	Intersection	14%
Network (Same)	Intersection	Discovery	13%
Network (Same)	Discovery	Intersection	12%
Interactional (Same)	Disabling	Blocking	12%

6.2 Privacy Negotiation Behaviors

I operationalized privacy negotiation behaviors as technology-supported boundary mechanisms that are available through SNS interface controls. (I outlined these mechanisms in Chapter 2.) While I believe that coping mechanisms are equally as important, they are harder to capture due to their more nuanced nature and will be saved for future studies. I measure technology-supported boundary negotiation behaviors through a combination of observed variables and perception sub-scales. When possible, SNS artifacts of behavior were captured, such as one's reported privacy settings. However, as Ellison et al. noted, "privacy behaviors on SNSs are not limited to privacy settings" (Ellison, Vitak et al. 2011). Therefore, not all privacy behaviors left behind artifacts of use. For instance, SNSs do not record a history of whom one unfriends or how often they delete content from their outward-facing territories. Thus these behaviors were represented on a 7-point Likert scale of the perceived frequency (Never to Always) of the behavior. All technology-supported boundary negotiation behavior items were coded on an ordinal scale from most open to most closed with respect to privacy. For example, default privacy level settings provided by Facebook included public, friends,

friends of friends, and specific people or lists. Public was considered most open and coded as a "1" while specific people or lists was considered most private and coded as "4." All scale items for privacy behavior across the ten boundary types are included in Appendix A.

Privacy paradox research suggests that there is not a correlation between privacy concern and actual behavior (Barnes 2006). I believe, however, that "privacy concern" as a construct has been loosely defined and operationalized in various ways in past research (Acquisti and Gross 2006; Xu, Dinev et al. 2008; King, Lampinen et al. 2011). For instance, Acquisti and Gross examined general privacy attitudes in relation to students' liklihood of providing certain types of private information on Facebook (Acquisti and Gross 2006). Therefore, instead of measuring general privacy attitudes, I measure SNS users' desired privacy level for each type of privacy boundary. Given one's desired privacy level for a particular type of privacy, it follows that SNS users would employ boundary mechanisms that are congruent to their privacy goals in order to achieve optimal privacy. However, I saw through the interviews that this was not always the case. In some cases, such as with network discovery boundaries, SNS users often did not perceive a high level of risk from exposing their networks to others. In many cases, SNS users were unaware that interface features even existed. When they did know about SNS interface controls, some still opted out of using them because it took too much effort. Therefore, I acknowledge that the relationship between one's desired privacy level and privacy behaviors is more complex, involving multiple moderating factors. However, I believe that limitations of the past studies can account for the lack of relationship between intent and behavior that has been labeled the privacy paradox. In my research

model, I hypothesize that one's desired privacy level is directly related to technology-supported boundary negotiation behaviors for each type of SNS interpersonal boundary. In other words, if SNS users desire a high level of network discovery privacy, they will use technology-supported boundary mechanisms specific to achieving their desired privacy level.

> H1: There is positive association between SNS desired privacy level and technology-supported boundary negotiation behaviors.

6.3 Awareness

6.3.1 Self-Awareness

Self-Awareness was operationalized as private and public self-awareness using pre-validated measures (Fenigstein, Scheier et al. 1975). Past CMC research often manipulated self-awareness to see its impact on various behaviors (Fenigstein, Scheier et al. 1975; Prentice-Dunn and Rogers 1982; Joinson 2001). This is not the case in this study; I will only capture an individual's trait specific self-awareness. Past research tends to be contradictory or ambiguous on how self-awareness may affect the boundary regulation process. While deindividuation and aggression have been studied as outcomes in the past, they do not necessarily equate to boundary regulation attitudes or behaviors. Joinson showed that CMC was characterized by higher levels of self-disclosure than FTF interactions, and when public self-awareness is low and private self-awareness is high, it leads to higher levels of CMC self-disclosure (Joinson 2001). Therefore, it is plausible that:

> H2:Lower levels of public self-awareness coupled with higher levels of private self-awareness are negatively associated with SNS desired privacy levels for disclosure (self and confidant).

> H3: Lower levels of public self-awareness coupled with higher levels of private self-awareness are negatively associated with technology-supported boundary negotiation behaviors for disclosure (self and confidant).

Furthermore, as the theoretical framework suggests, I believe that a heightened level of self-awareness is necessary for effective boundary regulation. Therefore,

> H4: Self-awareness moderates the relationship between SNS desired privacy level and technology-supported boundary negotiation behaviors such that higher levels of self-awareness will strengthen the relationship between the two.

6.3.2 Risk Awareness

Risk Awareness was operationalized as the self-reported likelihood of potential privacy loss (Xu, Dinev et al. 2008) due to a boundary violation and the occurrence of past adverse privacy events (King, Lampinen et al. 2011). This operationalization was in regard to each of the ten boundary types defined in the taxonomy and measured on a 7-point Likert scale. Since potential loss and actual experience are not always expected to correlate, I view risk awareness as a formative construct. See Appendix A for the full item scales. Individuals assess a risk-benefit ratio when negotiating their boundaries with others (Petronio 2002). Higher levels of perceived risk are associated with lack of trust and a stronger need for control (Olivero and Lunt 2004) in e-commerce relationships. Yet, research shows that Facebook users "generally believe that others in their network are at more risk than they are in regards to negative privacy-related outcomes" (Debatin, Lovejoy et al. 2009). King et al. found that past adverse privacy events were the strongest predictor of privacy attitudes on Facebook (King, Lampinen et al. 2011). Overall, I believe that higher levels of an individual's risk awareness will be associated with higher desired privacy levels and positively impact privacy behaviors:

H5: Higher levels of risk awareness are positively associated with higher SNS desired privacy levels.

H6: Risk-awareness moderates the relationship between SNS desired privacy level and technology-supported boundary negotiation behaviors such that higher levels of risk-awareness will strengthen the relationship between the two.

6.3.3 Feature Awareness

Feature Awareness was operationalized using Findlater and McGrenere's measure of feature awareness (Findlater and McGrenere 2010). For each technology-supported boundary mechanism, I had participants report their usage or current settings, then I subsequently asked, "For the feature or setting shown above, please indicate whether you remember noticing it prior to participating in this survey." Responses included, "No, I didn't see this item," "I vaguely recall seeing this item," and "Yes, I definitely recall seeing this item" (Findlater and McGrenere 2010). The qualitative findings identified feature awareness as a main contributing factor to the lack of use of technology-supported boundary mechanisms. This is consistent with past research which found that "Facebook literacy" was a problem as Facebook users were unconfident about privacy settings or did not know how to employ them (Ellison, Vitak et al. 2011). Facebook researchers have found that users who exhibit privacy concerns are generally unaware of their privacy settings and the accessibility others have to their content (Acquisti and Gross 2006; Strater and Lipford 2008). An individual's ability to set boundaries is often dependent on knowing the SNS interface controls available to support boundary regulation. Thus,

H7: Feature awareness is positively associated with technology-supported boundary negotiation behaviors.

H8: Feature awareness moderates the relationship between SNS desired privacy level and technology-supported boundary negotiation behaviors

such that higher levels of feature awareness will strengthen the relationship between the two.

6.4 Burden

Although burden was not included in the theoretical framework, it becomes a pertinent factor when specifically dealing with technology-supported boundary mechanisms. Therefore, I included it as a latent variable in this model. Burden was operationalized as the effort level required (Stutzman and Hartzog 2009) to effectively negotiate boundaries through the use of technology-supported boundary mechanisms. For each technology-supported boundary mechanism participants reported, I subsequently asked, "Please answer this question based on the feature or setting shown above. How much effort do you feel it takes to customize this feature or setting effectively?" Responses were measured on a 7-point Likert scale ranging from "None at All" to "A Great Deal." Environmental psychology research has proposed that "the overall ease of regulation in a setting depends on the effectiveness of the privacy mechanism used and on the ease of implementing these mechanisms" (Harris, Brown et al. 1996). Past SNS privacy research has also shown that burden plays a factor in boundary regulation; Stutzman found that technical skill level mediated the effectiveness of using multiple profiles to manage personal disclosures and that the burden was proportional to the size of one's network (Stutzman and Hartzog 2009). It is reasonable to believe that a high level of burden will deter SNS users from utilizing a particular mechanism for boundary regulation. For instance, I found that while some participants knew that they could categorize friends into groups on Facebook, they found it too hard to do so. Therefore, when the burden of using a feature is too high, feature awareness became insignificant. Therefore, I propose that:

H9: Burden moderates the relationship between feature awareness and technology-supported boundary negotiation behaviors such that high levels of burden will decrease technology-supported boundary negotiation behaviors even when feature awareness is high.

6.5 Individual Differences

Individual differences were captured as contextual factors in this study and used as control variables. My future research will use these variables to determine between group differences for various levels of this model. Demographic information included gender, age, ethnicity, and education level. The Facebook Intensity Scale (Ellison, Steinfield et al. 2007) and the types of SNS activities (Koroleva, Krasnova et al. 2011) SNS users engaged in were included as control variables. I also asked whether or not each participant was a UNC Charlotte student.

FIGURE 3 summarizes the research model and hypotheses. This general model was tested across each of the ten boundary types and results are presented below.

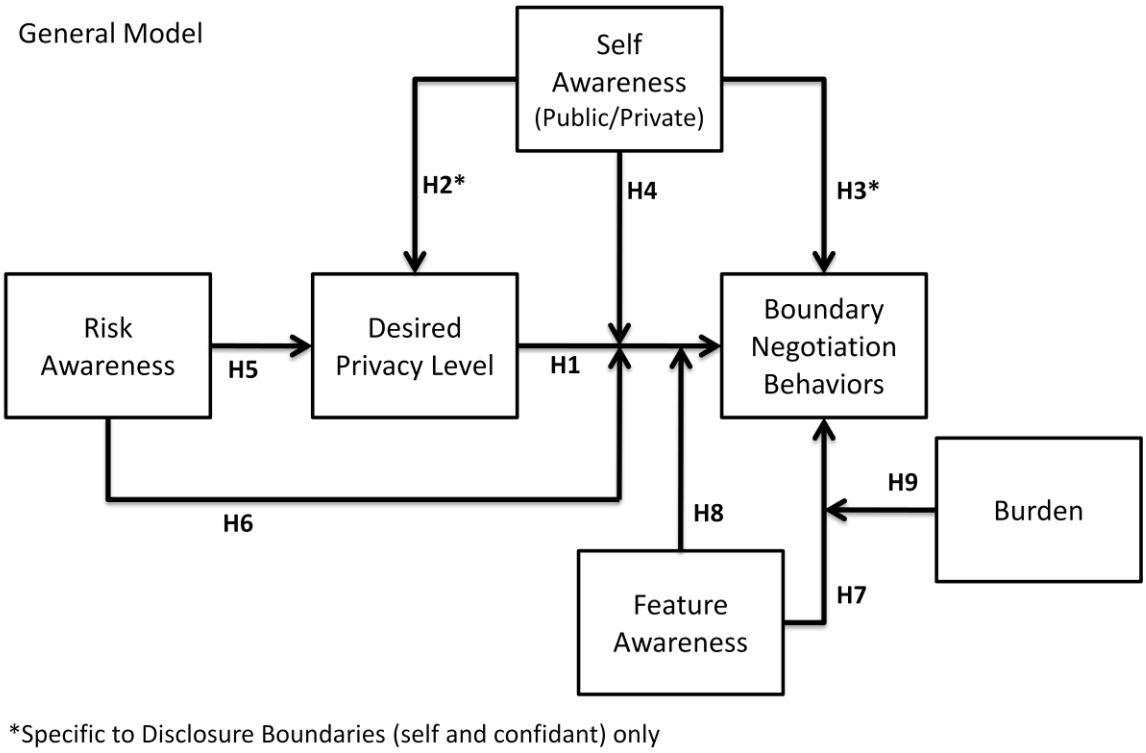


FIGURE 3: Research Model

6.6 Methodology

To test this model, I created a web-based survey instrument using Survey Share. Because technology-supported boundary mechanisms are dependent on SNS interface controls, I chose to use Facebook as the platform and Facebook users to test the research model. Facebook was chosen due to its unproportionally large user base compared to other SNSs. However, due to changes that occurred post-analysis from Chapter 3, I had to update some of the previously reported technology-supported boundary mechanisms from the taxonomy. In order to report technology-supported boundary negotiation behaviors (or privacy behaviors), participants were asked to simultaneously log-in to their Facebook accounts for a portion of the survey. Screenshots and detailed directions were given so that users could locate the particular feature or setting I was trying to capture. As

an example, FIGURE 4 shows a screen shot from the survey. This question was related to privacy behaviors for inward-facing territorial boundaries.

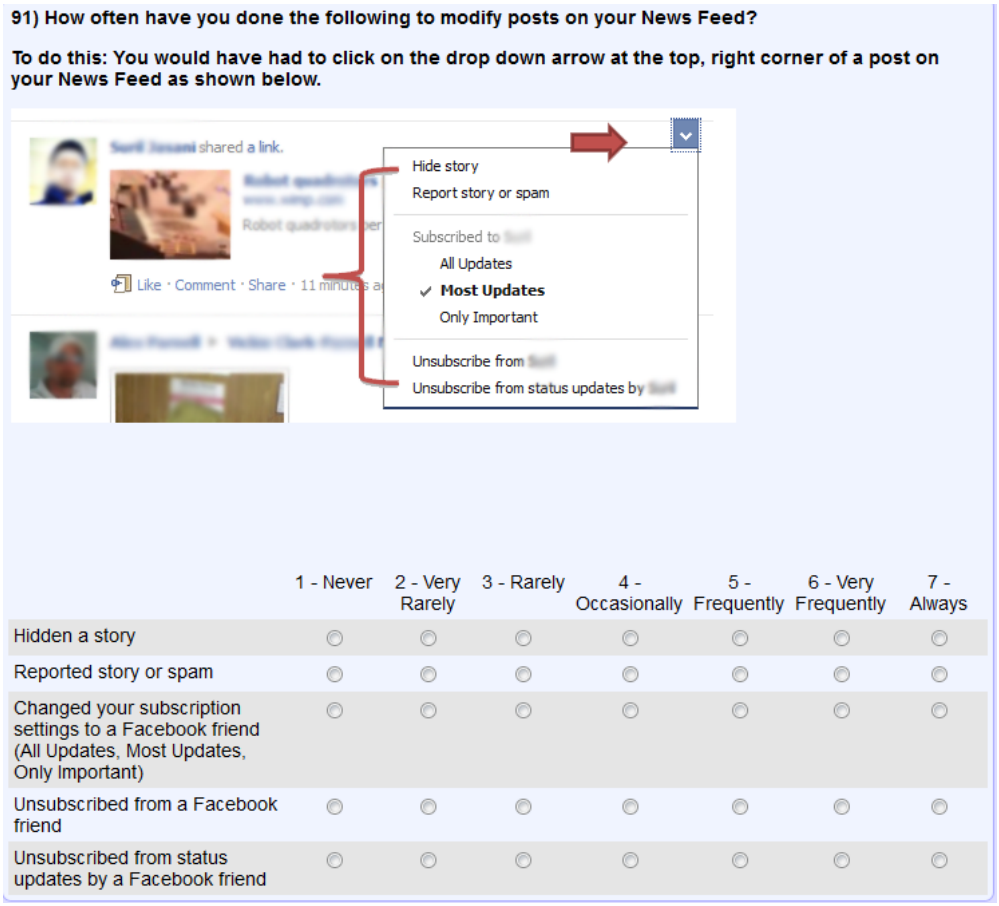


FIGURE 4: Example of Reported Privacy Behavior for Inward-Facing Territories

In order to make this survey comprehensive of all the different boundary types and different boundary mechanisms, it became necessarily long, often taking participants over an hour to complete in one sitting. All questions were optional, thus I will discuss how I handled missing data in the results. All individual scale items for each construct were randomly placed in the survey as to reduce method bias.

Participant recruitment was done through snowball sampling (Babbie 2004) using two different methods. First, the primary researcher seeded the snowball through her personal SNSs, (such as Facebook Twitter, and LinkedIn), via email, and posting to Craigslist's volunteer's message board in her local city. Second, a random sample of 5,000 UNC Charlotte email addresses were selected and emailed an invite to participate in the survey. The data from the two snowball sampling methodologies were collected in separate repositories to later check for between group differences. The justification for this methodology was to obtain as diverse of a sample as possible and to be able to expedite data collection. Participants had to be over 18 and have an active Facebook account. Participation was incentivized through the chance to win one of two $200 Amazon gift certificates through a random drawing of participants. Each participant who opted in to enter the drawing received one drawing entry. As an extra incentive to share the survey, participants received one additional entry for referring someone else who completed the survey. Each survey participant, however, was limited to a maximum of 25 drawing entries and was eligible to receive at most one $200 gift card. Both the survey questions and recruitment methodology described were approved by the university's Institutional Review Board (IRB).

For analysis, I first screened the data for univariate and multivariate outliers. Next, I generated descriptive statistics from the data as presented below. To test the hypotheses of the research model, data were analyzed using MPlus covariance based structural equation modeling (SEM) (Byrne 2012). I created separate SEMs for each of the ten theoretically derived types of privacy boundaries from the earlier taxonomy. Because desired privacy level is conceptualized as a formative construct instead of a

reflective construct, I do not believe that the different types of privacy will covary with one another. Therefore, each model will test the hypothesis of congruent desire and privacy behaviors. Future research may analyze the data in more depth in order to better understand incongruent desire and privacy behaviors. In light of this, I first conducted a confirmatory factor analysis (CFA) of the measures to assess convergent and discriminant validity as well as internal consistency of the constructs. I then tested the model using SEM in two steps. First, I tested the SEM model without the moderating effects to obtain general model fit. Then I conducted a latent interaction analysis in order to appropriately test the moderation predictions. Given latent interactions, MPlus does not provide goodness of fit statistics; therefore, I will report overall fit statistics from the un-moderated models.

6.7 Results

6.7.1 Data Screening

Data were screened for missing data, outliers, and normality prior to data analysis. Fortunately, Survey Share differentiates between complete and incomplete surveys and only includes completed surveys for download. Due to the lengthiness of the survey I had a total of 374 incomplete survey responses which were not included in the analysis. I collected a total of 314 completed surveys; however, six responses were deleted due to excessive missing data leaving us with a total sample size of 308. Univariate outliers existed as is expected with a large dataset (Tabachnick and Fidell 2007) and, therefore, were not removed from the analysis. Multivariate outliers were screened by calculating Mahalanobis distance (Tabachnick and Fidell 2007). No Mahalanobis distance exhibited a z-score over 3.29; therefore, no multivariate outliers were identified in this data set.

Most multivariate data analyses, including SEM, require the assumption of normality of distribution to hold. Therefore, I screened the data for normality. Items with skewness or kurtosis above the absolute value of one which suggests a violation in the assumption of normality (Tabachnick and Fidell 2007) are reported in Appendix B. All items for burden were normally distributed. Risk awareness and feature awareness, for the most part, were normally distributed. Desired privacy level tended to be skewed left with a large kurtosis, suggesting that the participants tended to desire high levels of privacy. Privacy behaviors were generally not normally distributed. Due to these assumption violations, I referenced MPlus technical documentation and found that using the MLM estimator was appropriate for the analysis of non-normal data. However, a trade off was that this estimator performed listwise deletion of missing data (Muthen and Muthen 2010; Byrne 2012). Because I made survey questions optional, this posed a problem. As a compromise, this analysis is presented using the default estimator (ML), but I performed post hoc analysis using the MLM estimator. I did find that some goodness-of-fit statistics increased as well as the significance of some relationships in the model. Overall, however, I wanted to avoid Type 1 errors and chose to conservatively report the results using the default ML estimator. For categorical data, I note that MPlus is the only software package that handles SEM analyses using categorical data with the WLSMV estimator. However, according to the literature, ordinal, categorical data with four or more categories can be modeled as continuous with factor loadings and correlations "only modestly underestimated" (Muthen and Muthen 2010). Therefore, I chose to treat the data for this analysis as continuous. Further in-depth analysis was

performed as a post hoc analysis for models that performed poorly, possibly due to categorical indicator variables and highly skewed data.

6.7.2 Descriptive Statistics

The sample included 119 males and 189 females. The average age of the participants was 35.74 years old with a standard deviation of 12 years, ranging from 18 to 75 years old. Sample distributions for ethnicity and education level are provided in TABLE 11 and TABLE 12.

TABLE 11: Ethnicity

Ethnicity	Frequency	Percent
-1 (Missing)	1	0.3%
White/Caucasian	240	77.9%
Black/African American	15	4.9%
Hispanic/Latino	9	2.9%
Asian/Pacific Islander	33	10.7%
American Indian/Alaskan Native	1	0.3%
Other	9	2.9%
Total	308	100.0%

TABLE 12: Education Level

Education Level	Frequency	Percent
Less than high school	2	.6%
High school diploma	6	1.9%
Some college	50	16.2%
2 year college degree	19	6.2%
4 year college degree	54	17.5%
Some graduate school	55	17.9%
Master's degree	77	25.0%
Doctoral degree	37	12.0%
Professional degree (MD, JD, etc.)	8	2.6%
Total	308	100.0%

Only 30.7% of the sample identified themselves as UNC Charlotte students. The majority (91.6%) of the sample reported having a Facebook account for over 2 years with 19.2% having an active Facebook account over six years. Based on the descriptive statistics of this sample, the data is skewed toward a predominantly white and well-educated, adult population who is not new to Facebook. Therefore, generalizability of the results may be constrained by the sample statistics.

Self-awareness was captured at the individual level using a pre-validated measure from previous psychology literature (Fenigstein, Scheier et al. 1975). Unfortunately, I found that the second order construct of self-awareness presented in the literature did not fit well with the data. The original measures produced a poor CFA with χ^2 (227) = 584.33, p=<0.0000, RMSEA=0.089 (with a CI from 0.08 to 0.098), p=0.00, CFI=0.71, TLI=0.68, and SRMR=0.086. Subsequently, I found out that other researchers (Bernstein, Teng et al. 1986) had found similar construct validity issues with this measure. Therefore, I was forced to adjust the operationalization of self-awareness so that I could produce adequate enough construct validity to add the construct to the model. After dropping 13 of the 23 indicator variables, I achieved an adequate CFA with χ^2 (31) = 48.55, p=<0.0233, RMSEA=0.053 (with a CI from 0.02 to 0.08), p=0.399, CFI=0.96, TLI=0.94, and SRMR=0.047. I admit that the CFA for self-awareness was over-fitted, but since the primary purpose of this study is not to create a stable construct of self-awareness, I believe this methodology was appropriate for the analysis. The descriptive statistics for all items for self-awareness are included in Appendix B with an asterisk for the items that remained in the analysis.

6.7.3 Inward-Facing Territorial Boundaries

The descriptive statistics for the scale items for risk awareness (RIN1, RIN2) and desired privacy level (IN1, IN2, IN3) are presented in TABLE 13. Both were measured on 7-point Likert scales ranging from lowest (1) to highest (7). Risk awareness tended to be lower than desired privacy level, and individuals tended to desire fairly high levels of inward-facing territorial privacy.

TABLE 13: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RIN1	306	3.86	1.766
RIN2	305	3.08	1.612
IN1	307	5.15	1.529
IN2	308	5.92	1.163
IN3	305	5.68	1.286
Valid N (listwise)	300		

Technology-supported privacy behaviors I identified in the taxonomy as relevant to inward-facing territorial boundaries for Facebook include altering one's News Feed and blocking applications (BLAP) so that they do not post automatically to one's News Feed. News Feed modifications include hiding a story (NFHID), changing subscription settings for a friend (NFS), unsubscribing from a Facebook friend (NFUN), unsubscribing from status updates from a friend (NFUNP), and reporting story or spam (NFSP). I measured both feature awareness (NF1, BLAP1) and the burden (NF2, BLAP2) of implementing these technology-supported privacy behaviors. The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 14, FIGURE 5).

TABLE 14: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
NFHID	305	2.85	1.623
NFSP	301	1.96	1.321
NFS	304	2.81	1.664
NFUN	305	2.64	1.472
NFUNP	306	2.65	1.490
NF1	303	2.40	.790
NF2	307	3.28	1.657
BLAP	305	2.52	1.533
BLAP1	304	1.94	.910
BLAP2	305	3.48	1.728
Valid N (listwise)	283		

In order to compare reported values for behavior, feature awareness, and burden, I standardized the scales by multiplying each mean by the lowest common denominator (FIGURE 5).

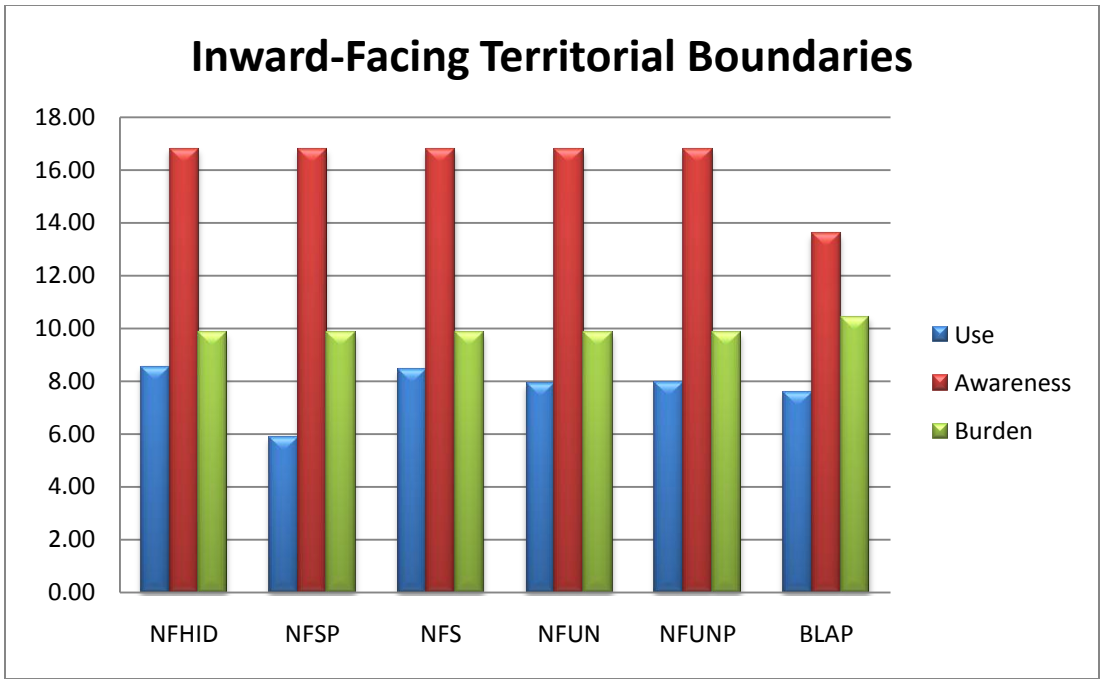


FIGURE 5: Privacy Behavior, Feature Awareness, and Burden

As shown in FIGURE 5, overall usage of inward-facing territorial boundary mechanisms is low. The means across all privacy behaviors remain lower than 3 on a 7-point Likert scale. However, feature awareness was relatively high for News Feed modifications and somewhat lower for blocking applications.

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Based on the initial CFA, hiding a story (NFHID) was removed as a privacy behavior due to problems with internal consistency. This may be because hiding a story represents a temporary, one-time fix that serves to ignore instead of create a permanent boundary. It is also important to note that blocking an application (BLAP) was actually inversely related to moderating one's News Feed. Though I originally coded these variables to be in the same direction, it makes sense that if an individual blocks applications often, they are less likely to have to modify their News

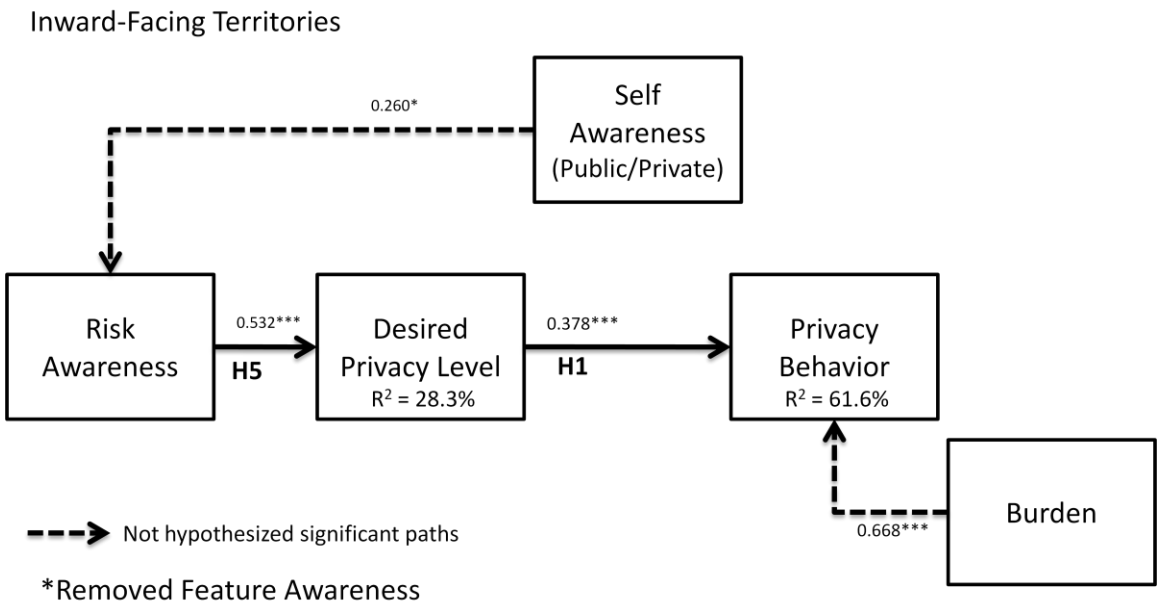
Feed directly. This is consistent with the qualitative findings that cited removing annoying posts from one's News Feed as the most common need for inward-facing territorial boundaries. In addition, one measure for desired privacy level (IN1) was removed due to internal consistency problems. Since I recently developed the measures for desired privacy, I expected that some adjustments would need to be made to the scale. The MPlus modification indices identified covarying relationships such as allowing the feature awareness of blocking an application (BLAP) to vary with the perceived burden of blocking an application (BLAP2). In cases where modification indices were greater than 25 and were theoretically sound, I allowed feature awareness, burden, and use of a feature or setting to covary. In addition, the CFA reported that feature awareness covaries and correlates (TABLE 15) so highly with privacy behavior that MPlus views them as virtually the same construct as the dependent variable; thus, required us to remove it before running the structural model.

TABLE 15: Covariance and Correlation Matrices for Inward-Facing Territories

ESTIMATED COVARIANCE MATRIX FOR THE LATENT VARIABLES					
	RISKAWR	**DESPRIV**	**FEATAWR**	**BURDEN**	**PRIVBEH**
RISKAWR	0.944				
DESPRIV	0.364	0.638			
FEATAWR	0.309	0.557	1.316		
BURDEN	-0.003	0.098	0.545	0.379	
PRIVBEH	0.357	0.383	1.392	0.511	1.511

ESTIMATED CORRELATION MATRIX FOR THE LATENT VARIABLES					
	RISKAWR	**DESPRIV**	**FEATAWR**	**BURDEN**	**PRIVBEH**
RISKAWR	1				
DESPRIV	0.469	1			
FEATAWR	0.277	0.608	1		
BURDEN	-0.005	0.2	0.772	1	
PRIVBEH	0.299	0.39	0.987	0.676	1

After these adjustments, the CFA for the final research model specific to inward-facing territories indicates that the measures have appropriate convergent and discriminant validity with χ^2 (174) = 234.3, p=<0.0002, RMSEA=0.04 (with a CI from 0.03 to 0.06), p=0.85, CFI=0.94, TLI=0.93, and SRMR=0.06. Next, I ran a SEM for inward-facing territorial boundaries for direct effects and the results are presented in FIGURE 6.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 6: Structural Model for Direct Effects for Inward-Facing Territorial Boundaries

Desired privacy level did represent a significant path for privacy behavior; therefore, hypotheses 1 was accepted. (Hypotheses 2 and 3 were specific to disclosure boundaries thus were not applicable to this model.) Risk awareness was significantly and positively associated with desired privacy level (H5) and explained 30.2% of the variance in desired privacy level for inward-facing territories. I also observed a direct relationship between self-awareness and risk awareness that was not previously hypothesized. Also unhypothesized, burden (the perceived effort level it takes to use a feature or setting effectively) was positively associated with privacy behavior. Interestingly enough, the direction of the relationship is counterintuitive to the original thinking. Essentially, the higher the perceived effort of using a privacy feature or setting, the more likely participants were to use it. I believe a possible explanation to this occurrence is that individuals who used News Feed modifications and app blocking to manage their inward-

facing territorial boundaries realize the cognitive load required for use. In contrast, individuals who do not use these features are rating burden solely based on the simplicity of the control itself.

The CFA supported that feature awareness was significantly and positively associated with privacy behavior, but it was so highly correlated that it had to be removed from the model as MPlus found it indistinguishable from privacy behavior. Theoretically, however, feature awareness and privacy behavior were operationalized as distinctly different constructs. For instance, for News Feed privacy behaviors I asked, "How often have you done the following to modify posts on your News Feed? Unsubscribed from a Facebook friend." This question was answered on a 7-point Likert scale ranging from Never to Always. On the other hand, feature awareness was queried as "For the feature or setting shown above, please indicate whether you remember noticing it prior to participating in this survey." Therefore, hypothesis 7 was accepted with a caveat. I believe that there could have been a method effect causing an inflated correlation because metrics for feature awareness were collected right after asking about one's privacy behavior. Even so, I believe that feature awareness represents a key factor in privacy behavior even though it had to be removed as a construct in the SEM. Overall, I was able to explain a substantial amount of the variance of privacy behavior in the model. Even without feature awareness in the model, I observed an R^2 = 61.7%. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (177) = 245.11, p=<0.0005, RMSEA=0.04 (with a CI from 0.03 to 0.06), p=0.78, CFI=0.93, TLI=0.92, and SRMR=0.06.

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=0.07, p=0.62) and risk awareness (β=0.108, p=0.32) were not significant moderators of desired privacy level and privacy behavior. Therefore, hypotheses 4 and 6 were rejected. Since feature awareness had to be removed from the SEM, I could not test for hypotheses 8 and 9. Thus, none of the hypotheses that predicted moderation effects (H4, H6, H8, H9) were supported. However, I did find a moderating effect of burden (β=0.472, p=0.01) on the relationship between desired privacy level and privacy behavior (FIGURE 7).

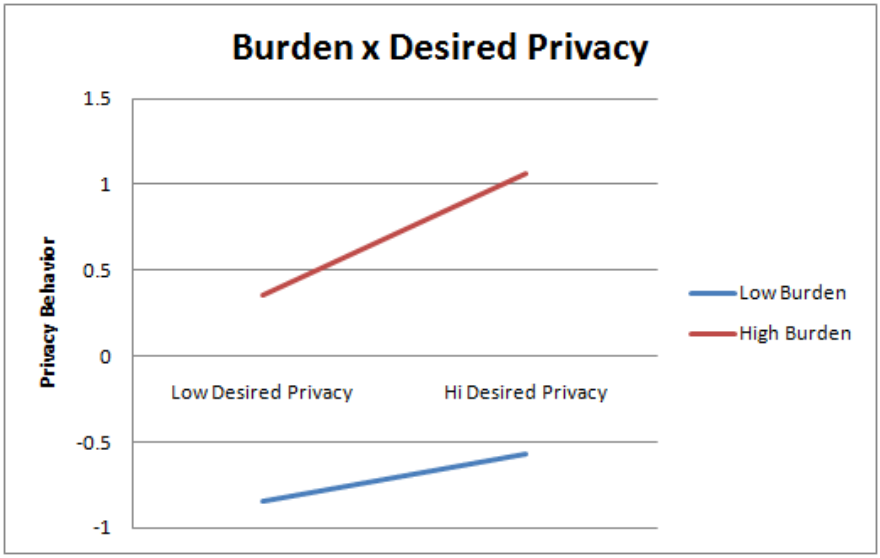


FIGURE 7: Interaction Effect of Burden x Desired Privacy Level

I observed a main effect of burden such that high levels of burden resulted in a positive association between desired privacy level and privacy behavior across all levels of desired privacy level. Again, I believe that a possible explanation for this outcome is that individuals who do not already use News Feed moderation and app blocking as

privacy behaviors for inward-facing territories may have rated burden of use low, whereas individuals who practice these behaviors better understand the nuances of use. Therefore, it is when desired privacy level is high that we see overall mechanism use increase. TABLE 16 summarizes the findings for this model.

TABLE 16: Result Summary for Inward-Facing Territorial Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	ACCEPT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT (Caveat)
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT (Caveat)
H9: Burden X Feature Awareness → Privacy Behavior	REJECT (Caveat)

6.7.4 Outward-Facing Territorial Boundaries

The descriptive statistics for the scale items for risk awareness (ROUT1, ROUT2) and desired privacy level (OUT1, OUT2, OUT3) for outward-facing territorial boundaries are presented in TABLE 17. Risk awareness tended to be lower than desired privacy level, and individuals tended to desire fairly high levels of outward-facing territorial privacy. Relative to inward-facing territories, individuals tended to perceive somewhat higher risk of privacy loss for outward versus inward-facing territories. This makes sense because inward-facing territories are private whereas outward are public in nature.

TABLE 17: Descriptive Statistics Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
ROUT1	302	4.34	1.624
ROUT2	305	3.14	1.653
OUT1	308	6.22	1.058
OUT2	307	5.79	1.386
OUT3	306	5.50	1.492
Valid N (listwise)	299		

I operationalized outward-facing territorial privacy behaviors on Facebook as a second order construct comprised of Timeline/Wall moderation behaviors and Timeline/Wall settings. Wall moderation behaviors include deleting a post (CWALD), reporting/marking as spam (CWALS), hiding a post from one's Timeline (CWALH), and asking a friend to take down (TAKED) or untag (UNTAG) a photo or post. Facebook settings related to outward-facing territorial boundaries included, "who can see what others post on your timeline" (SEE), "who can see posts that appear on your timeline because you've been tagged," (TAG), and default privacy level (DEFAULT). Wall moderation behaviors (CWALH, CWALD, CWALS, UNTAG, and TAKED) were measured on 7-point Likert scales based on frequency of use. Wall settings (SEE, TAG, DEFAULT) were captured based on participants' self report of their current settings and recoded from most open (1) to most closed (n) based on the n number of options available. For instance default privacy (DEFAULT) level on Facebook can be set as public (n=1), friends of friends (n=2), friends (n=3), specific people or lists (n=4), or only me (n=5). The descriptive statistics are below (TABLE 18, FIGURE 8).

TABLE 18: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
CWALH	304	2.35	1.534
CWALD	300	2.69	1.384
CWALS	299	1.75	1.204
CWAL1	304	2.42	.775
CWAL2	302	3.04	1.585
UNTAG	300	2.27	1.323
UNTAG1	300	2.18	.839
UNTAG2	298	3.33	1.649
TAKED	302	1.62	1.098
TAKED1	300	1.82	.843
TAKED2	304	3.45	1.721
TAG	304	2.99	.711
TAG1	299	2.20	.846
TAG2	300	3.33	1.626
SEE	305	3.01	.801
SEE1	302	2.27	.839
SEE2	301	3.26	1.607
DEFAULT	307	2.99	.782
DEFAULT1	304	2.63	.636
DEFAULT2	304	3.59	1.647
Valid N (listwise)	244		

In FIGURE 8 below, I standardized the scales for privacy behavior, feature awareness, and burden by multiplying each mean by the lowest common denominator to allow comparison. Individuals tended to delete Wall posts more often than hiding or reporting them as spam. They also preferred untagging photos of themselves instead of using the privacy mechanism to ask friends to take down a photo. Feature awareness for being able to modify content on one's Wall was fairly high. The lowest feature awareness was for asking a friend to take down a post which was functionality recently added to Facebook. Similar to inward-facing territories, burden using a mechanism was reported to be higher than reported privacy behavior. In the case of reported privacy settings (TAG,

SEE, DEFAULT), feature awareness was high. What I found most interesting was that the default values for these settings were changed 82.2%, 80.3%, 92.2% of the time, respectively, and to be more restrictive than the Facebook default setting. This is contrary to past research that suggests that default settings are rarely changed.

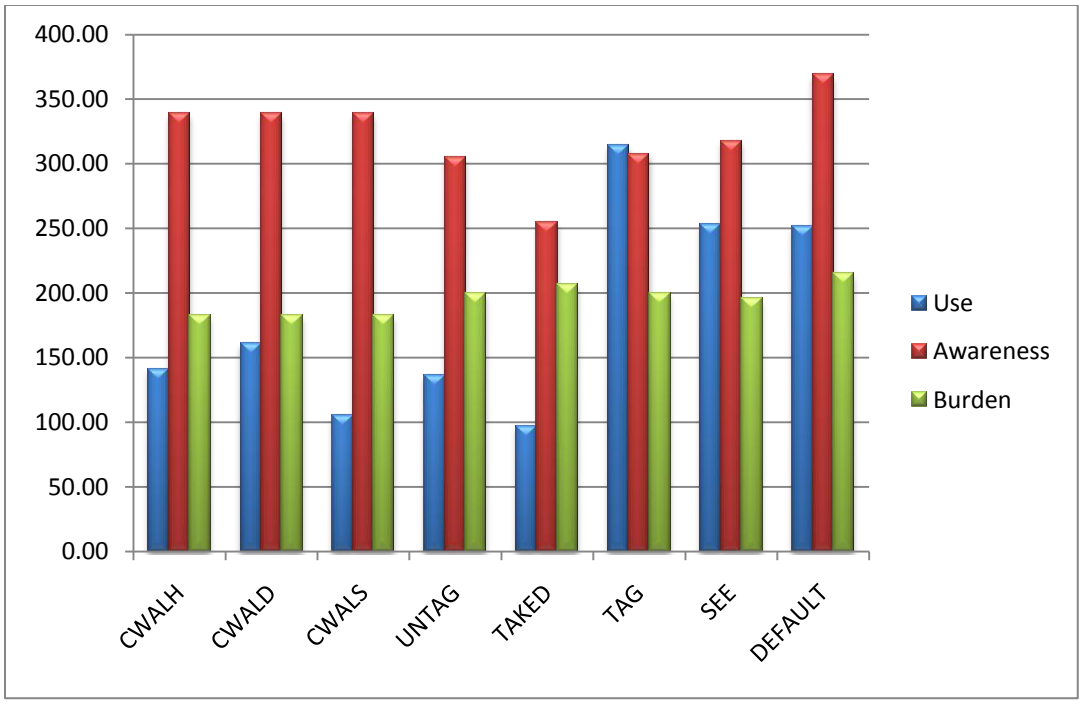


FIGURE 8: Privacy Behavior, Feature Awareness, and Burden

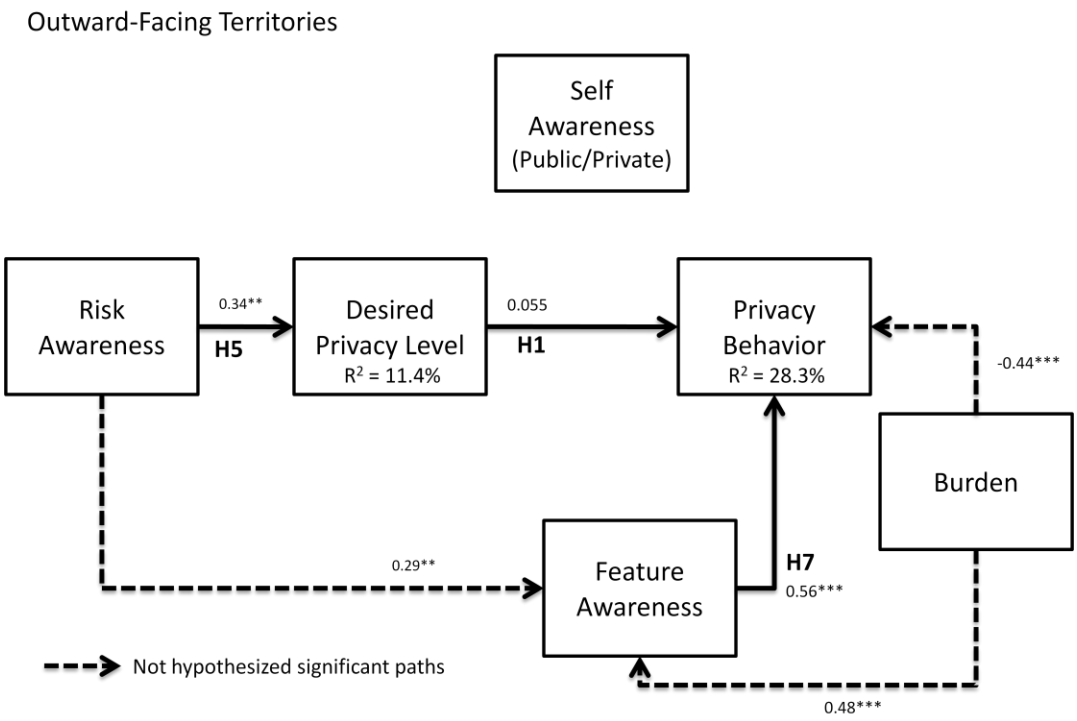
After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Based on the initial CFA, reporting or marking a post as spam (CWALS) was removed due to internal consistency problems. The descriptive statistics already suggested that this privacy mechanism was used less frequently than other types of Wall moderation behaviors. This may also be because the other types of Wall moderation are interpersonal in nature while marking spam usually occurs because a friend unintentionally allowed a third-party malicious app. Deleting a Wall post

(CWALD) cross loaded too highly with feature awareness and had to be removed from the model. One interpretation is that if participants knew that they could delete content from their Wall, they took advantage of doing so.

I also found that the construct validity of the second order model was a poor fit. Wall settings did not load similarly to Wall moderation behaviors and were characterized more accurately as a completely separate construct. In retrospect, this makes sense because if individuals changed their Wall settings, they are less likely to have to use the Wall moderation behaviors to maintain their boundaries. For instance, if an individual set "who can see what others post on your timeline" (SEE) to "only me," it is less likely they will ever have to hide or delete content from their Wall. Therefore, in order to test the hypotheses, I chose to exclude Wall settings and only examine Wall moderation behaviors. In my future research, I will analyze outward-facing territory privacy settings and its relationship to privacy behaviors more closely. For the final model, outward-facing territorial privacy behaviors included hiding Wall posts (CWALH), untagging (UNTAG), and asking friends to take down (TAKED) a picture or post. Also, UNTAG2 was allowed to covary with UNTAG1. After these adjustments, the CFA for the final research model specific to outward-facing territories indicates that the measures have appropriate convergent and discriminant validity with χ^2 (232) = 335.74, p=<0.0000, RMSEA=0.05 (with a CI from 0.04 to 0.06), p=0.65, CFI=0.93, TLI=0.91, and SRMR=0.06.

Next, I ran a SEM for outward-facing territorial boundaries for direct effects (FIGURE 9). Desired privacy level did not represent a significant path for privacy behavior; therefore, hypothesis 1 was rejected. Risk awareness was significantly and

positively associated with desired privacy level (H5) but only explained 11.4% of the variance in desired privacy level for outward-facing territories. It is possible that other factors such as self-presentation play a role in desired privacy level for outward-facing territories. Feature awareness was directly related to privacy behavior which supported hypothesis 7. I also noted additional significant direct effects that were not hypothesized between risk awareness and feature awareness, burden and feature awareness, and burden and privacy behavior. In these cases, most of these relationships are not surprising. An individual with heightened risk awareness may seek out a feature in order to maintain his or her boundaries. A relationship that was not hypothesized but possibly implied by moderating effects was observed between burden and privacy behavior. The higher the burden of using privacy behaviors, the less likely those privacy behaviors were exhibited. The positive relationship between burden and feature awareness is a little less logical. However, it can probably be explained by the fact that people who are more aware of a feature can more accurately assess the level of effort it takes to effectively use the privacy feature. Overall, the model was able to explain a moderate amount of the variance of privacy behavior with an observed R^2 = 28.3%. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (236) = 344.94, p=<0.0000, RMSEA=0.05 (with a CI from 0.04 to 0.06), p=0.61, CFI=0.92, TLI=0.91, and SRMR=0.06.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 9: Structural Model for Direct Effects for Outward-Facing Territorial Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=0.25, p=0.35) was not a significant moderator of desired privacy level and privacy behavior (H4). However, risk awareness was a significant moderator (β=0.69, p=0.007) of desired privacy level and privacy behavior (FIGURE 10). For high levels of desired privacy and high levels of risk awareness, privacy behaviors were more consistent with desired privacy level. However, the main effect of low risk awareness reduced the relationship between desired privacy level and privacy behavior. For low levels of risk awareness coupled with high levels of desired privacy level, the relationship between desired privacy level and privacy behavior became negative.

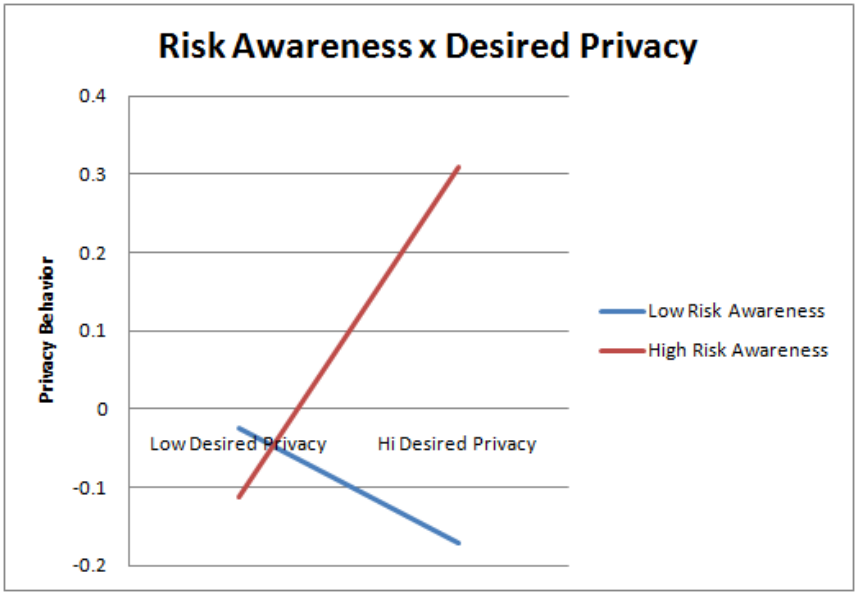


FIGURE 10: Interaction Effect of Risk Awareness x Desired Privacy Level

Feature awareness (β=0.11, p=0.62) did not moderate desired privacy level and privacy behavior (H8), and burden (β=-0.42, p=0.53) did not moderate feature awareness and privacy behavior (H9). However, I did find a nearly significant (unhypothesized) moderation effect of burden (β=-0.868, p=0.066) on the relationship between desired privacy level and privacy behavior (FIGURE 11).

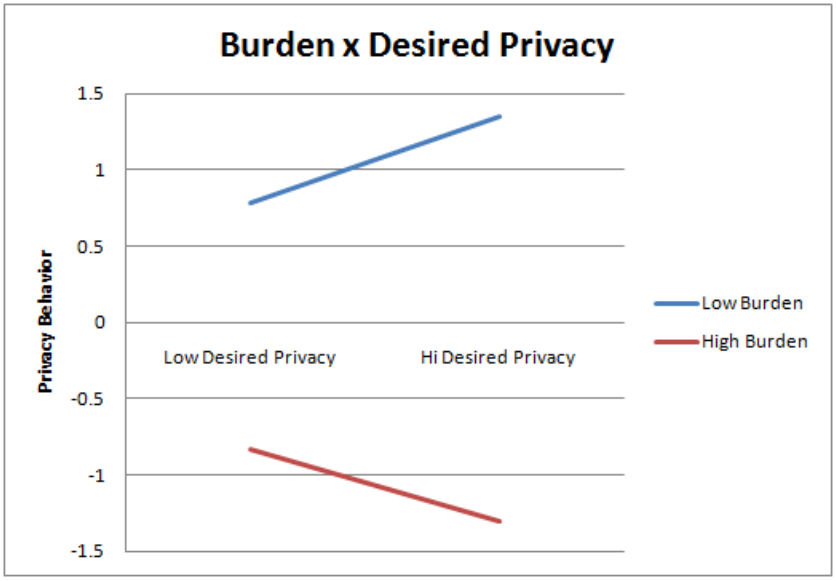


FIGURE 11: Interaction Effect of Burden x Desired Privacy Level

I saw a main effect of high burden which reduced the relationship between outward-facing territorial Wall modification privacy behaviors with desired privacy levels. However, for low burden, the relationship between desired privacy level and privacy behavior was more consistent with my hypotheses. Based on the latent interaction analysis, high levels of risk awareness and low levels of burden aid in making privacy behaviors more consistent with desired privacy level (adding a caveat to H1). I went back to the interviews to help explain the low explained variance of risk awareness to desired privacy level and the lack of significance between desired privacy level and privacy behavior. I found a quote by Allen regarding why he deleted content from his Facebook Wall:

> "I often delete comments to fix spelling mistakes. I have deleted a couple comments when I reread it and saw it might be taken the wrong way. I also have deleted comments from women who were flirting excessively much, and I did not want my wife or others to take it the wrong way. I do my best to monitor comments made and received for everyone's sake."– Allen, Technical Services, 31

Here, his motivation for making adjustments to his outward-facing territories was not due to personal privacy preferences. Instead, he was worried about the correctness of his own posts and the well-being of others. Therefore, I can infer that others may also have additional motivations beyond one's privacy to execute these behaviors. TABLE 19 summarizes the outcomes for the hypotheses.

TABLE 19: Result Summary for Outward-Facing Territorial Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	REJECT (Caveat)
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.5 Network Discovery Boundaries

The descriptive statistics for the scale items for risk awareness (RDISC1, RDISC2) and desired privacy level (DISC1, DISC2, DISC3) for network discovery boundaries are presented in TABLE 20. Risk awareness tended to be lower than desired privacy level, and both risk awareness and desired privacy level for network discovery boundaries tend to be lower than previous boundaries. A possible explanation from the qualitative findings was that individuals found benefit in the serendipity of finding unknown degrees of separation between friends and also felt that it was outside their locus of control for how friends used their network to connect with others.

TABLE 20: Descriptive Statistics Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RDISC1	301	3.92	1.665
RDISC2	306	2.74	1.442
DISC1	307	4.92	1.486
DISC2	308	4.44	1.590
DISC3	307	4.40	1.538
Valid N (listwise)	299		

Currently, Facebook only provides one technology-supported privacy mechanism for protecting one's network discovery boundaries. It is the ability to view one's friend list from his or her profile based on a well hidden privacy setting. The options are to set one's friend list as public (n=1), friends (n=2), custom friends or lists (n=3), or only me (n=4). The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 21). Only 25% of the sample had left this setting at the Facebook default of public while 57.5% chose to set their network discovery boundary to friends, 9.1% as custom, and 6.5% as only me. Given that the majority of individuals chose to adjust this setting from the default, it makes sense that feature awareness for network discovery boundaries is relatively high at 42.9% of participants having definitely seen this feature, 20.6% vaguely aware of the feature, and 36.5% having never seen the feature before.

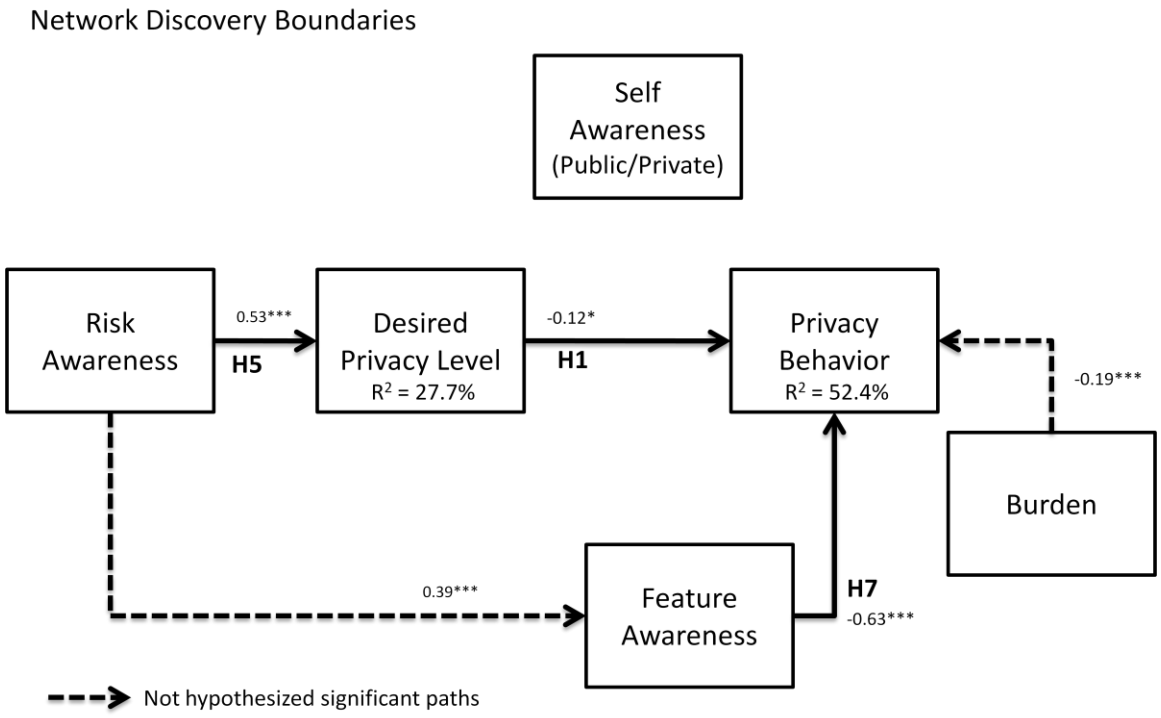
TABLE 21: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
FRLIST	302	1.97	.783
FRLIST1	301	2.06	.890
FRLIST2	300	3.34	1.691
Valid N (listwise)	297		

Due to the lack of additional mechanisms, privacy behavior, feature awareness, and burden could only be measured by one indicator variable. Therefore, it is not appropriate to test these variables for internal consistency or convergent and discriminant validity. All other latent variables in the model were added to a CFA. Based on the MPlus modification indices, feature awareness and risk awareness were allowed to covary. The CFA for the initial research model specific to network discovery boundaries indicates that the measures have appropriate convergent and discriminant validity with χ^2 (83) = 121.24, p=<0.004, RMSEA=.05 (with a CI from 0.03 to 0.07), p=0.55, CFI=0.95, TLI=0.93, and SRMR=0.05. Next, I ran a SEM for network discovery boundaries for direct effects (FIGURE 12).

Desired privacy level represented a significant path for privacy behavior. However, it was in the opposite direction than hypothesized and exhibited a relatively small coefficient (β=-0.12). Therefore, hypothesis 1 was rejected. Risk awareness was significantly and positively associated with desired privacy level (H5) and explained 27.7% of the variance in desired privacy level for network discovery boundaries. Feature awareness was a significant path in the model but in the opposite direction than hypothesized (H7). While individuals exhibited a high level of feature awareness (as the majority of participants had changed their default setting from public to friends), the privacy behavior was characterized as more "open" than "closed." As shown in the descriptive statistics, the majority of the participants chose to set their privacy level as "friends" (n=2) instead of being more restrictive. Because of how I coded data, this setting falls relatively low on the scale for privacy behavior (range from 1-4) whereas desired privacy level was centered at a higher mean using a 7-point Likert scale. This

may account for some of the counterintuitive relationships I observed in this model. It is possible that the scale for privacy behavior in this model needs to be revisited. For this model, I treated privacy behavior as continuous when it was truly ordinal on a 4-point scale. The data was also far from normally distributed and almost resembled a dichotomous distribution.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 12: Structural Model for Direct Effects for Network Discovery Boundaries

A significant relationship was observed between burden and privacy behavior. Here, the direction of the relationship is as expected. Higher levels of burden are associated with reduced privacy behavior. Similar to the previous model, there was an unhypothesized positive and significant relationship between risk awareness and feature awareness. Overall, I observed an R^2 = 52.4% for explaining privacy behaviors for

network discovery boundaries with the majority of this variance being explained by feature awareness. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (127) = 177.74, p=<0.002, RMSEA=0.05 (with a CI from 0.03 to 0.06), p=0.69, CFI=0.94, TLI=0.93, and SRMR=0.07.

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=-0.003, p=0.93) was not a significant moderator of desired privacy level and privacy behavior. Therefore, hypotheses 4 was rejected. Risk awareness was a significant (β=0.073, p=0.025) moderator between desired privacy level and privacy behavior (FIGURE 13).

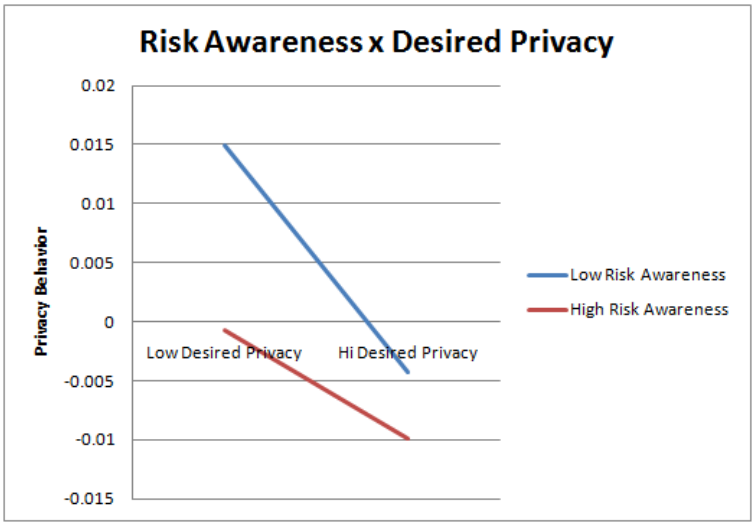
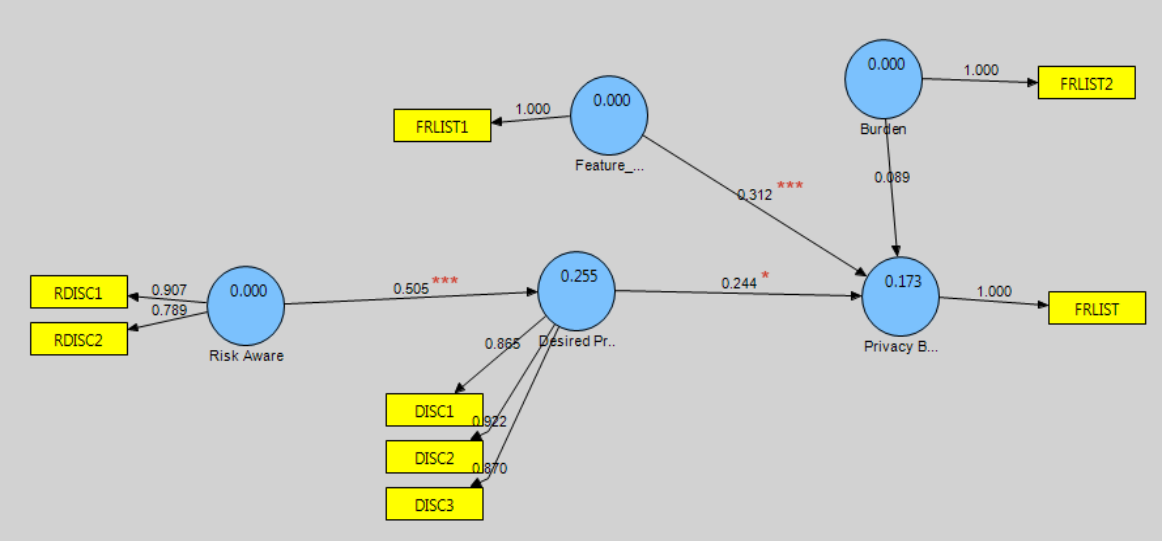


FIGURE 13: Interaction Effect of Risk Awareness x Desired Privacy Level

Again, the interaction analysis is counterintuitive. There appears to be a main effect of risk awareness such that low levels of risk awareness result in a stronger relationship between desired privacy level and privacy behaviors. I feel that this result might also be due to the coding logic of the scale for privacy behavior. The interaction

model for feature awareness as a moderator between desired privacy level and privacy behavior did not converge using MPlus. Therefore, I re-evaluated this model through a post-hoc analysis given the lack of convergence and the counter-intuitive findings presented here.

For this model and subsequent models that proved problematic using MPlus SEM (most likely due to highly skewed or dichotomous data), I did a post hoc analysis using SmartPLS which is a software package that uses partial least squares and bootstrapping to calculate the SEM (Chin 1998; Gefen, Rigdon et al. 2011). I also used SmartPLS to test the moderating effects that I was not able to compute using MPlus. While SmartPLS is not as robust as MPlus, its strength is in exploratory, predictive models and the fact that it has more relaxed requirements for data normality and other assumptions than covariance based SEM used in MPlus. I first reran the model for network discovery boundaries because I felt that skewed data and logic used for coding the dependent variable contributed into the counterintuitive negative coefficients in the MPlus model. I was also unable to test for the moderating effect of feature awareness on desired privacy level and privacy behavior. The SmartPLS model (FIGURE 14) found significant and positive paths for desired privacy level and feature awareness to privacy behavior. Therefore, instead of rejecting H1 and H7 as I did in the previous model, this model suggests that I would accept them. I also retested H8 for moderating effects of feature awareness on desired privacy level because the MPlus model did not converge. I found that hypothesis 8 was not supported.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 14: SmartPLS model for Network Discovery

Based on the post-hoc findings, I revised the final results for the hypotheses. TABLE 22 summarizes the findings for this model.

TABLE 22: Result Summary for Network Discovery Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	ACCEPT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.6 Network Intersection Boundaries

The descriptive statistics for the scale items for risk awareness (RINTER1, RINTER2) and desired privacy level (INTER1, INTER2, INTER3) for network

intersection boundaries are presented in TABLE 23. The descriptive statistics suggest that individuals are fairly laissez-faire when it comes to how their social circles overlap on Facebook with both risk awareness and desired privacy level being relatively low.

TABLE 23: Descriptive Statistics Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RINTER1	305	3.86	1.636
RINTER2	304	2.92	1.557
INTER1	307	3.79	1.665
INTER2	306	3.99	1.560
INTER3	308	4.19	1.523
Valid N (listwise)	299		

Network intersection boundaries are maintained through the creation and use of friend lists, such as categorizing new friends into lists (LISTN), categorizing old or existing friends into lists (LISTO), posting content to a specific friend list (POSTL), or posting a picture to a specific friend list (PICL). A large percentage of the participants (45.8%) had not created any Facebook friend lists while only 5.5% had created more than 10 custom friend lists. Overall feature awareness of friend lists, however, was high with 48.4% of the sample definitely aware of the functionality, 21.7% vaguely aware, and 29.9% unaware. Because the majority of participants did not create friend lists, they subsequently did not categorize friends by these lists or use them to post pictures or content.

TABLE 24: Friend List Creation

Friend Lists (LIST)	Frequency	Percent
0	141	45.8%
1-3	65	21.1%
4-6	47	15.3%
7-10	38	12.3%
> 10	17	5.5%
Total	308	100.0%

Feature awareness of being able to post a status update or a picture to a specific friend list was low. Almost half of the participants (45.5% for status update, 48.7% for pictures) were not aware that they could do this at all. In addition, burden for using friend lists (LIST2, POSTL2, PICL2) were all rated relatively high on a 7-point Likert scale. The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 25, FIGURE 15).

TABLE 25: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
LIST1	304	2.18	.867
LIST2	303	3.87	1.803
LISTN	302	2.63	2.032
LISTO	301	2.34	1.726
POSTL	302	1.89	1.453
POSTL1	301	1.89	.887
POSTL2	299	3.52	1.713
PICL	306	1.84	1.545
PICL1	304	1.82	.871
PICL2	303	3.52	1.751
Valid N (listwise)	265		

Consistent with the qualitative findings, individuals created friend lists and categorized friends more often than they actually used these lists to interact with those groups of friends (FIGURE 15).

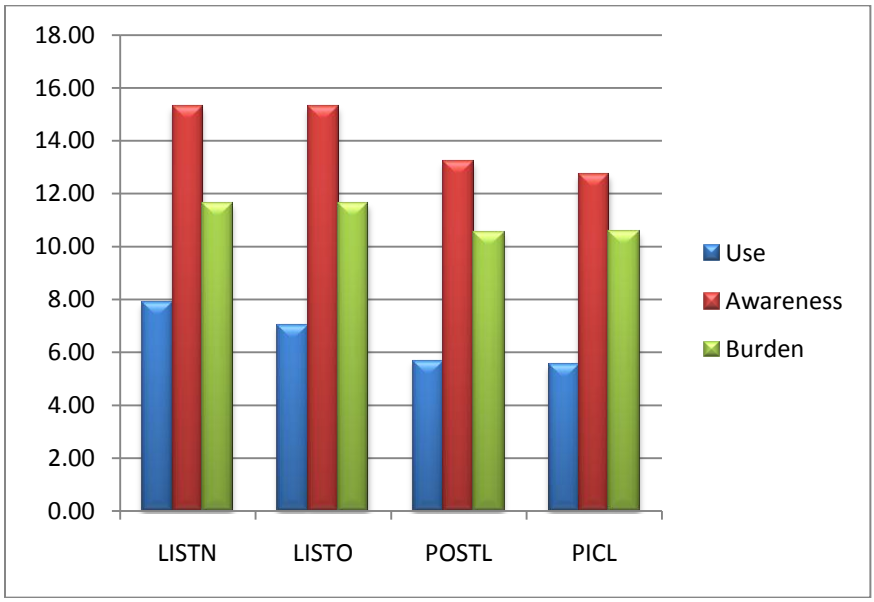
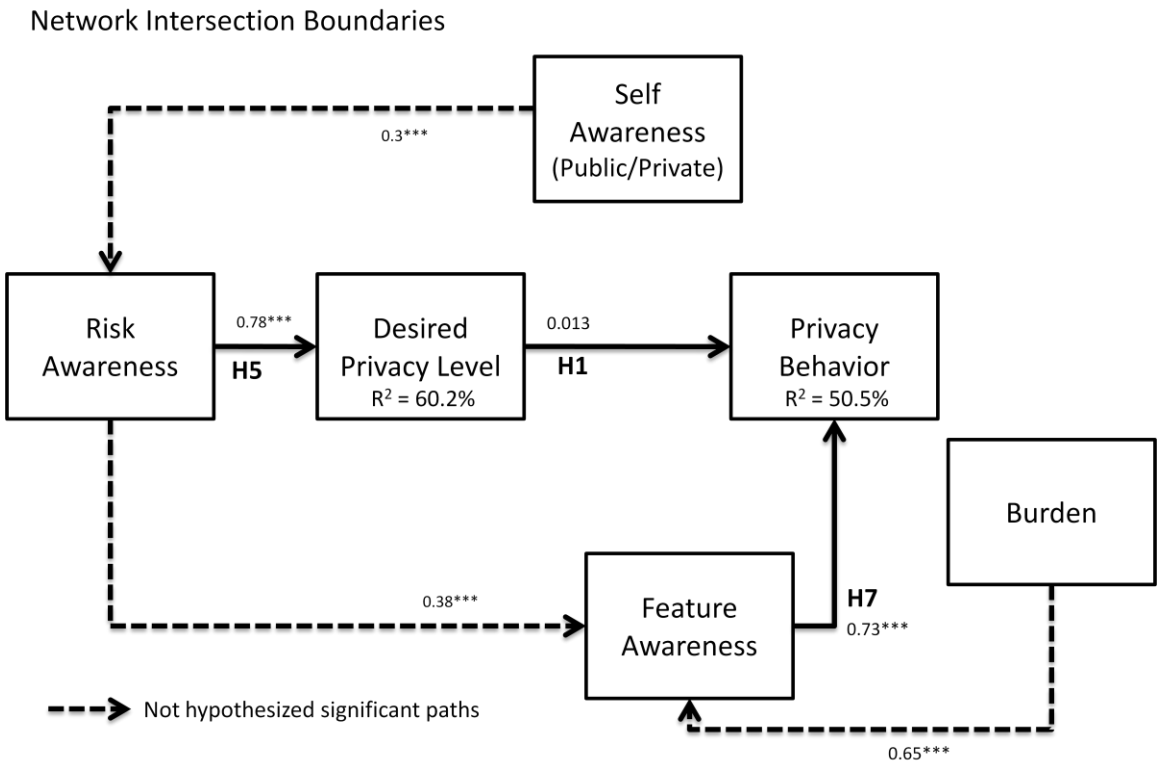


FIGURE 15: Privacy Behavior, Feature Awareness, and Burden

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Posting a picture to a specific friend list (PICL) correlated too highly with categorizing new friends into friend lists (LISTN); therefore, it was removed as an indicator for privacy behavior. This may suggest that people who categorize new friends into friend lists do so primarily so that they can post pictures to specific lists. Or, it could suggest that individuals who post pictures based on friend lists are more likely to categorize new friends into lists so that they can continue to leverage this privacy mechanism. I also found a strong relationship between the feature awareness of creating friend lists and overall privacy behavior. This makes sense because

awareness is a prerequisite to use. However, because this cross loading was so high, I had to remove feature awareness for friend list creation (LIST1) from the model. After these adjustments, the CFA for the final research model specific to network intersection boundaries indicates that the measures have appropriate convergent and discriminant validity with χ^2 (210) = 330.75, p=<0.0002, RMSEA=0.05 (with a CI from 0.04 to 0.06), p=0.28, CFI=0.93, TLI=0.92, and SRMR=0.055.

Next, I ran a SEM for network intersection boundaries for direct effects (FIGURE 16). Desired privacy level was not a significant path for privacy behavior; therefore, hypothesis 1 was rejected. Yet, risk awareness was a significantly and positively associated with desired privacy level (H5) and explained 60.2% of the variance in desired privacy level for network intersection boundaries. Feature awareness had a significant path to privacy behavior (H7). This path was strong with a β=0.73 suggesting that feature awareness has a great impact on privacy behavior in this model. Unhypothesized direct effects that were also significant are included in FIGURE 16. Overall, I observed a high R^2 = 50.5% for explaining privacy behaviors for network intersection boundaries. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (214) = 335.2, p=<0.000, RMSEA=0.05 (with a CI from 0.04 to 0.06), p=0.31, CFI=0.93, TLI=0.92, and SRMR=0.056.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 16: Structural Model for Direct Effects for Network Intersection Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=-0.045, p=0.39), risk awareness (β=0.00, p=0.995), and feature awareness (β=0.01, p=0.78) were not significant moderators of desired privacy level and privacy behavior. Therefore, hypotheses 4, 6, and 8 were rejected. Burden (β=0.03, p=0.47) was also not identified as a significant moderator between feature awareness and privacy behavior (H9). Overall, the main effect of feature awareness has a large impact on privacy behaviors when it comes to network intersection boundaries of using friend lists to manage one's different social circles. TABLE 26 summarizes the findings for this model.

TABLE 26: Result Summary for Network Intersection Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	REJECT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.7 Relationship Context Boundaries

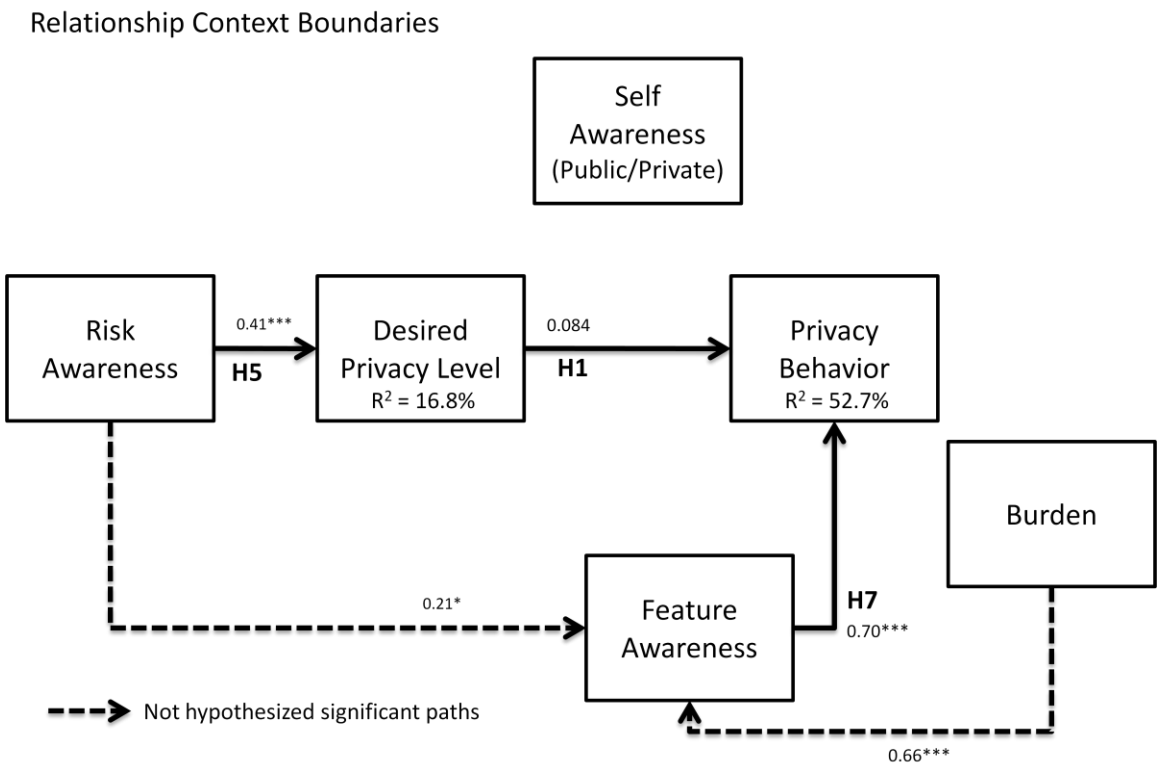
The descriptive statistics for the scale items for risk awareness (RCONT1, RCONT2) and desired privacy level (CONT1, CONT2, CONT3) for relationship context boundaries are presented in TABLE 27. While individuals felt that "the way Facebook treats all of my connections as 'friends' with equal footing creates a high potential for privacy loss," (RCONT1), they reported significantly lower levels of this having negatively affected them personally in the past (RCONT2). In addition, desired privacy level for relationship context was high.

TABLE 27: Descriptive Statistics Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RCONT1	304	4.41	1.564
RCONT2	305	2.87	1.482
CONT1	305	5.88	1.172
CONT2	305	5.69	1.235
CONT3	307	5.29	1.382
Valid N (listwise)	296		

Unfortunately, the only mechanism Facebook has to manage relationship context is the same mechanism used for managing network intersection boundaries – list creation and management. Therefore, refer to TABLE 25 and FIGURE 15 for the descriptive statistics for privacy behavior, feature awareness, and burden. I performed a CFA to confirm construct validity of the measures. The CFA adjustments for the dependent variable (privacy behavior for list creation and management) was the same as the previous analysis in network intersection boundaries. The CFA for the final research model specific to relationship context boundaries indicates that the measures have appropriate convergent and discriminant validity with χ^2 (209) = 357.62, p=<0.0000, RMSEA=0.06 (with a CI from 0.05 to 0.07), p=0.07, CFI=0.92, TLI=0.90, and SRMR=0.058.

Next, I ran a SEM for relationship context boundaries for direct effects (FIGURE 17). Desired privacy level did not represent a significant path for privacy behavior; therefore, hypothesis 1 was rejected. Risk awareness was a significantly and positively associated with desired privacy level (H5) and explained 16.8% of the variance in desired privacy level for relationship context boundaries. Feature awareness had a significant path to privacy behavior (H7). This path was strong with a β=0.70 suggesting that feature awareness has a great impact on privacy behavior in this model. Unhypothesized direct effects that were also significant are included in (FIGURE 17). Overall, I observed an R^2 = 52.7% for explaining privacy behaviors for relationship context boundaries. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (213) = 360.41, p=<0.000, RMSEA=0.06 (with a CI from 0.05 to 0.07), p=0.084, CFI=0.92, TLI=0.90, and SRMR=0.06.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 17: Structural Model for Direct Effects for Relationship Context Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=-0.021, p=0.78), risk awareness (β=-0.06, p=0.23), and feature awareness (β=0.034, p=0.47) were not significant moderators of desired privacy level and privacy behavior. Therefore, hypotheses 4, 6, and 8 were rejected. Burden (β=0.02, p=0.67) was also not identified as a significant moderator between feature awareness and privacy behavior (H9). Overall, the main effect of feature awareness, again, has the biggest impact on privacy behaviors of using friend lists to manage one's relationship contexts. This finding is consistent with qualitative observations that many SNS users had no idea they could post content to specific friend lists on Facebook. In fact, many SNS users believed that Google+ was the first to allow this ability. This suggests that Facebook designers failed

to provide adequate visual cues to let their users know that this capability existed. TABLE 28 summarizes the findings for this model.

TABLE 28: Result Summary for Relationship Context Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	REJECT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.8 Relationship Connection Boundaries

The descriptive statistics for the scale items for risk awareness (RCONN1, RCONN2) and desired privacy level (CONN1, CONN2, CONN3) are presented in TABLE 29. Similar to network intersection boundaries, individuals felt a higher potential for privacy loss (RCONN1) than what they had personally experienced (RCONN2). Overall, desired privacy for relationship connection was moderate to fairly high.

TABLE 29: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RCONN1	305	4.06	1.707
RCONN2	305	3.00	1.624
CONN1	308	3.34	1.549
CONN2	308	4.37	1.598
CONN3	308	3.40	1.660
Valid N (listwise)	305		

Relationship connection boundaries are measured by whom one allows to be a part of one's network and whom one decides to exclude from one's network. Therefore, I operationalized privacy behavior for relationship connection by how often they hid friend requests instead of approving them (HIDO), the number of pending friend requests (PEND) and how often an individual unfriended (UNFRIEND). I measured both feature awareness (HIDO1, PEND1, UNFRIEND1) and the burden (HIDO2, PEND2, UNFRIEND2) of implementing these technology-supported privacy behaviors. The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 30, FIGURE 18).

TABLE 30: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
HIDO	291	2.92	1.443
HIDO1	302	2.38	.788
HIDO2	300	2.90	1.590
PEND	308	1.88	1.256
PEND1	305	2.65	.682
PEND2	306	2.76	1.542
UNFRIEND	304	2.55	1.236
UNFRIEND1	303	2.49	.754
UNFRIEND2	306	2.99	1.622
Valid N (listwise)	278		

In FIGURE 18 below, I standardized the scales for privacy behavior, feature awareness, and burden by multiplying each mean by the lowest common denominator. Hiding friend requests, number of pending friend requests, and unfriending was generally infrequent though feature awareness of these mechanisms was high and burden was generally low.

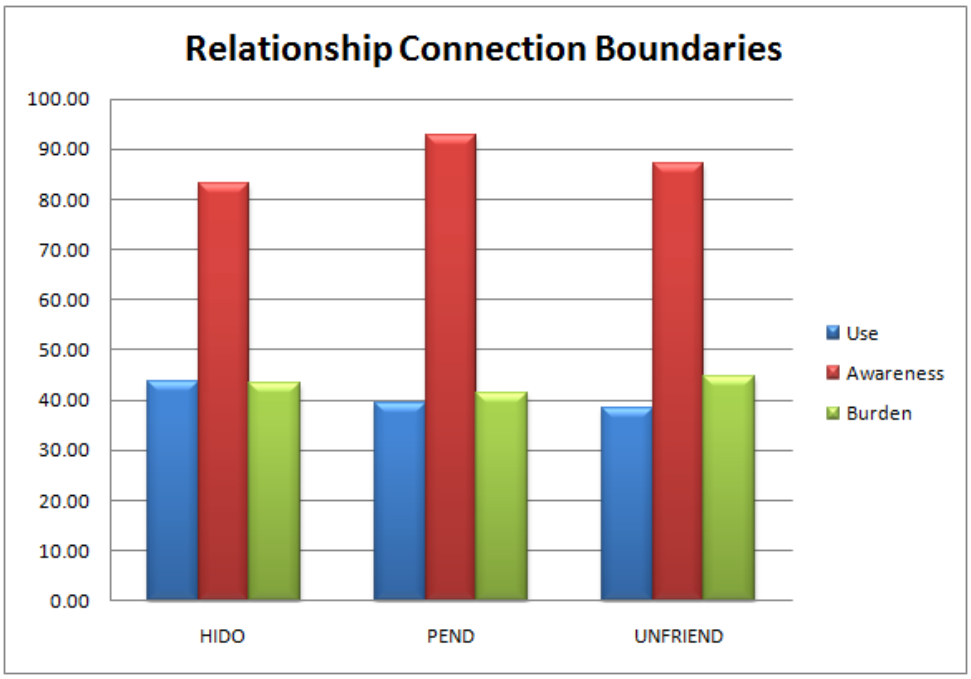


FIGURE 18: Privacy Behavior, Feature Awareness, and Burden

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Based on the initial CFA, the feature awareness of number of pending requests (PEND1) was removed due to problems with internal consistency. Retrospectively, the number of pending friend requests may not be related to one's relationship connection boundaries. Feature awareness of unfriending (UNFRIEND1) was allowed to covary with the privacy behavior of unfriending (UNFRIEND). It was interesting to note that number of friends was significantly and positively associated with the privacy behaviors of hiding, pending, and unfriending. It is possible that individuals with larger networks are confronted with these types of relationship connection decisions more frequently. However, this was contrary to the belief that relationship connection privacy behaviors would work to keep one's number of friends lower. After these adjustments, the CFA for the final research model specific to

relationship connection indicates that the measures have appropriate convergent and discriminant validity with χ^2 (232) = 292.01, p=<0.0045, RMSEA=0.04 (with a CI from 0.02 to 0.05), p=0.97, CFI=0.96, TLI=0.95, and SRMR=0.06.

Next, I ran a SEM for relationship connection boundaries for direct effects (FIGURE 19). Desired privacy level (H1) did not represent a significant path for privacy behavior. The relationship between desired privacy level and privacy behavior was negative with a very small effect size. Although the hypothesis for the general research model predicted a positive and significant relationship between desired privacy level and privacy behavior, this result is actually more consistent with the qualitative findings for this particular privacy boundary. While some of the participants had high levels of desired relationship connection privacy, they often did not act on this desire due to peer pressure and other relational complexities. For instance, Nelson felt that he had to friend his sister even though he did not want to:

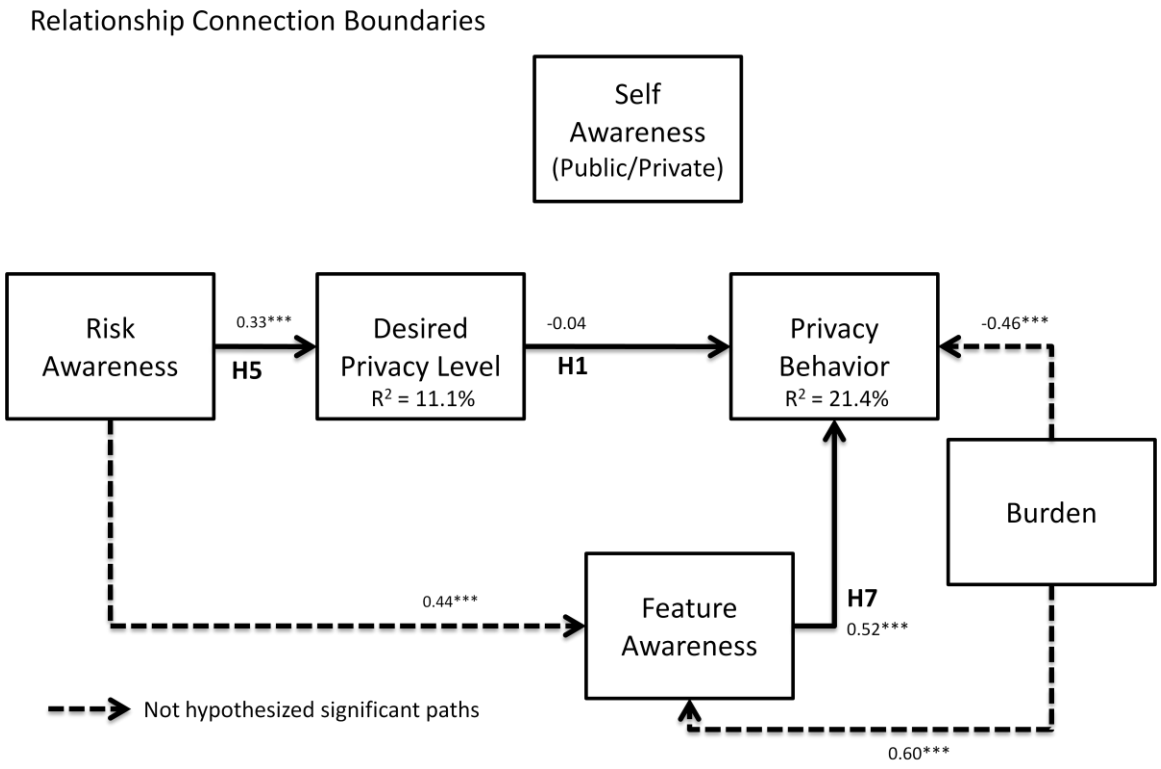
> "I ended up having to friend my sister so that--she wanted my mom who was right next to me, to see this picture she posted on Facebook. I didn't have a good excuse to not friend her, and so I did this, and once I did I, didn't have a good excuse to unfriend her." –Nelson, Office Manager, 53

Unfriending was also a privacy behavior that required a high bar for SNS users and, therefore, was rarely implemented:

> "Basically, somebody has to do something pretty egregious to actually be unfriended." –Kurt, Dating Coach, 32

Risk awareness was significantly and positively associated with desired privacy level (H5) and explained 11.1% of the variance in desired privacy level for relationship connection boundaries. Feature awareness (H7) was significantly and positively related to privacy behavior, and burden was significantly and negatively associated with privacy behavior. Other significant direct effects that were not hypothesized are included in

FIGURE 19. The relationship between risk awareness and feature awareness as well as the relationship between feature awareness and burden are consistent with previous models. Overall, I was able to explain only a moderate amount of the variance of privacy behavior in the model. I observed an R^2 = 21.4%. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (236) = 294.14, p=<0.006, RMSEA=0.035 (with a CI from 0.02 to 0.05), p=0.78, CFI=0.96, TLI=0.96, and SRMR=0.06.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 19: Structural Model for Direct Effects for Relationship Connection Boundaries

Next, I tested for latent interactions using a step-wise analysis. In contrast to previous models, self awareness (β=1.073, p=0.021) was a significant moderator between desired privacy level and privacy behavior (H4). FIGURE 20 shows that for high levels

of desired privacy and high levels of self awareness, relationship connection privacy behaviors are more consistent with desired privacy level. Due to this interaction, I will add a caveat to hypotheses 1. I find this interesting as self awareness has not been a very impactful construct in the model thus far. However, I interpret this to mean that self awareness plays a more important role when privacy boundaries are more relational in nature.

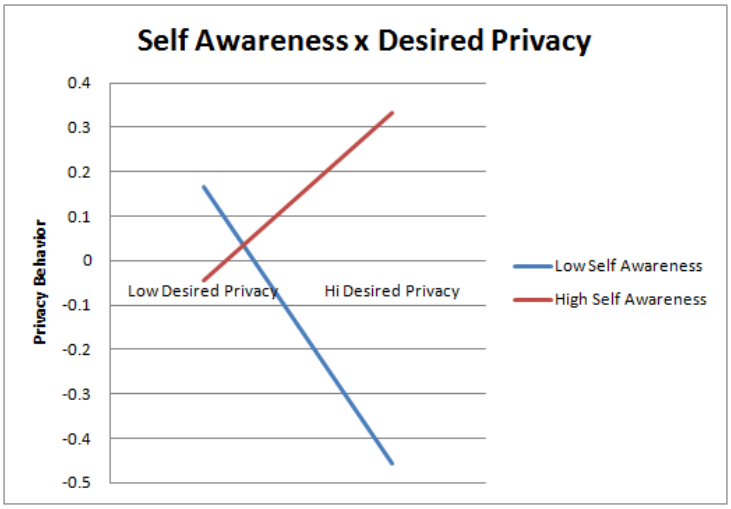


FIGURE 20: Moderation Effect of Self Awareness on Desired Privacy Level and Privacy Behavior

Risk awareness (β=0.372) was significant at the p=0.063 level as a moderator of desired privacy level and privacy behavior (H6). Therefore, I accepted the hypothesis with a caveat regarding the significance level. FIGURE 21 shows the interpretation of the moderation. Low levels of risk awareness cause a big shift in the relationship between desired privacy levels and behavior. Low levels of desired privacy and low levels of risk awareness are consistent with one's privacy behaviors. However, when desired privacy is high with low risk awareness, there is a very large discrepancy between desired privacy

level and privacy behaviors. A possible explanation for this is that these individuals do not equate relationship connection with general privacy protection.

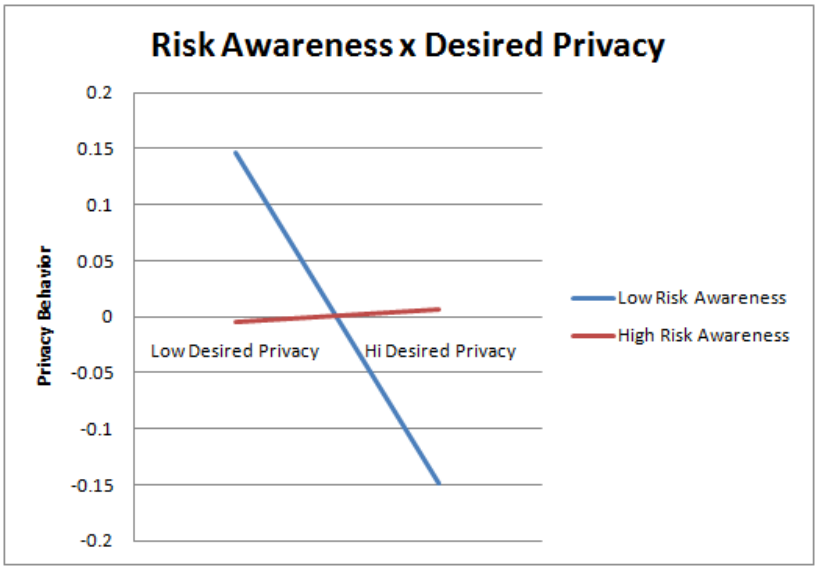


FIGURE 21: Moderation Effect of Risk Awareness on Desired Privacy Level and Privacy Behavior

Feature awareness (β=0.552) moderated desired privacy level and privacy behavior at p=0.099. As such, H8 was accepted with a caveat for significance level. FIGURE 22 shows that for high levels of feature awareness and high levels of desired privacy, privacy behavior is more consistent with desired privacy. This also supports the caveat added to H1.

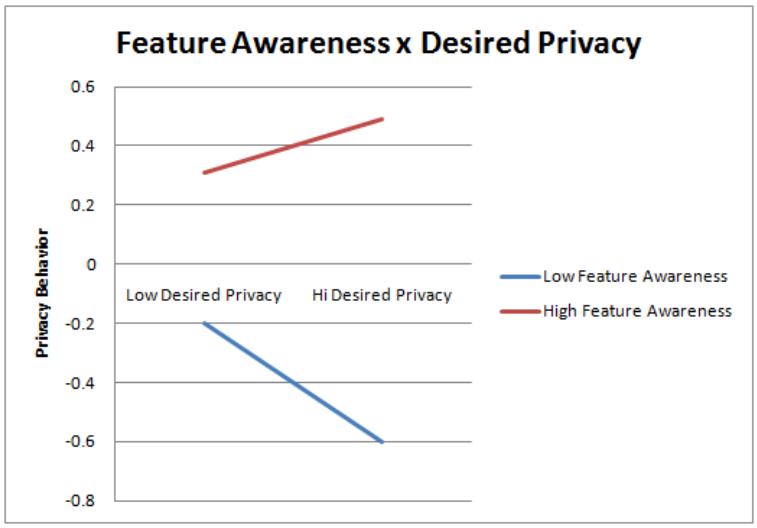


FIGURE 22: Moderation Effect of Feature Awareness on Desired Privacy Level and Privacy Behavior

Burden (β=-0.176, p=0.48) did not moderate the relationship between feature awareness and privacy behavior (H9). Overall, relationship connection boundary negotiation has a number of contingencies and complexities. While desired privacy was not directly related to one's privacy behaviors for relationship connection, higher levels of self awareness, risk awareness, and feature awareness helped remedy this rift. TABLE 31 summarizes the findings for this model.

TABLE 31: Result Summary for Relationship Connection Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	REJECT (CAVEAT)
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT (CAVEAT)
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT (CAVEAT)
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.9 Interactional Blocking Boundaries

The descriptive statistics for the scale items for risk awareness (RBLOCK1, RBLOCK2) and desired privacy level (BLOCK1, BLOCK2, BLOCK3) are presented in

TABLE 32. While the risk awareness for potential privacy loss (RBLOCK1) was quite high, negative personal, past experiences with interactional blocking boundary violations were generally low. Overall, desired privacy level for blocking was also high.

TABLE 32: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RBLOCK1	303	4.59	1.534
RBLOCK2	305	2.85	1.513
BLOCK1	307	5.81	1.384
BLOCK2	306	5.43	1.586
BLOCK3	307	5.32	1.427
Valid N (listwise)	298		

Originally, I had identified blocking a user (BLUS) as the only technology supported mechanism for interactional blocking. However, through an exploratory factor analysis of privacy behaviors, I found that restricting users (RESTR) loaded highly on the same factor. Therefore, individuals tended to view blocking and restricting users similarly. Therefore, I chose to include both blocking and restricting users as indicator items for the dependent variable. The difference between the two is that restricted users are Facebook friends whom one wants to exclude from any status updates, and blocking is done for individuals who are not Facebook friends. Blocking prevents an individual from searching for or friending an individual on Facebook. The descriptive statistics for

privacy behavior, feature awareness, and burden are below (TABLE 33). The privacy behavior of blocking and restricting users (BLUS, RESTR) were both low. For blocking, 62.2% of the participants had zero Facebook users blocked with 24.8% reporting having 1-3 users blocked. Only 2.6% of the participants had more than ten people blocked. Similarly, 70.7% of the participants had no Facebook friends added to their restricted list with 17.6% having 1-3 people restricted. Again, only 2% of the participants had more than 10 Facebook friends added to their restricted list.

TABLE 33: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
BLUS	307	1.59	.946
BLUS1	305	2.03	.919
BLUS2	302	3.46	1.623
RESTR	307	1.49	.909
RESTR1	307	1.93	.908
RESTR2	304	3.48	1.649
Valid N (listwise)	297		

In FIGURE 23 below, I standardized the scales for privacy behavior, feature awareness, and burden by multiplying each mean by the lowest common denominator. Again, overall usage of interactional blocking boundary mechanisms is low. However, feature awareness was relatively high. On average, the participants were more aware of blocking than they were restricting users.

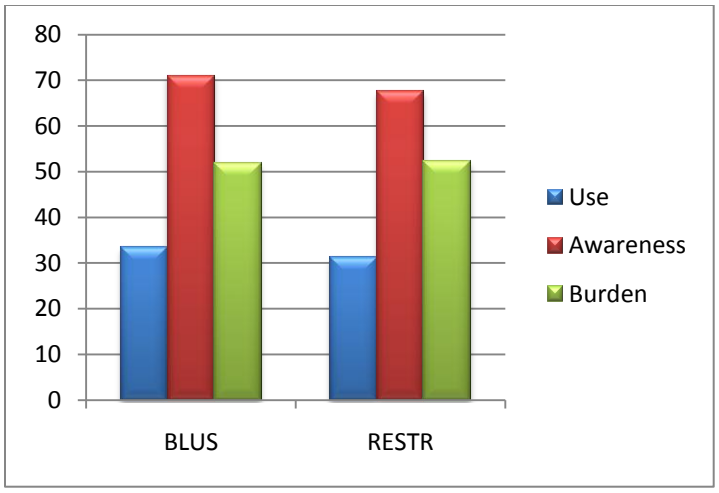


FIGURE 23: Privacy Behavior, Feature Awareness, and Burden

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Based on the initial CFA, the burden of blocking a user (BLUS2) was too similar to the burden of restricting a user (RESTR2) and was, therefore, removed as an indicator variable of burden. Feature awareness of blocking (BLUS1) and restricting (RESTR1) users was allowed to covary with number of blocked users (BLUS) and number of restricted users (RESTR), respectively. After these adjustments, the CFA for the final research model specific to interactional blocking indicates that the measures have appropriate convergent and discriminant validity with χ^2 (136) = 203.53, p=<0.0002, RMSEA=0.05 (with a CI from 0.035 to 0.06), p=0.49, CFI=0.95, TLI=0.93, and SRMR=0.06.

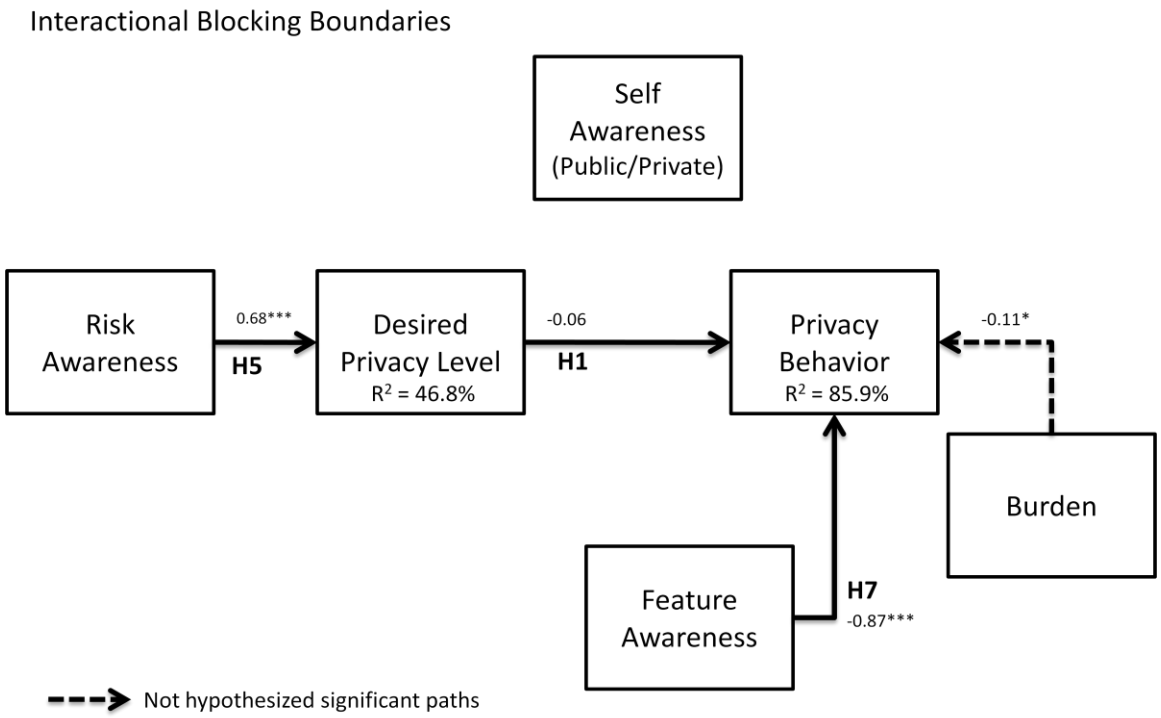
Next, I ran a SEM for interactional blocking boundaries for direct effects (FIGURE 24). After running the initial SEM, MPlus identified the burden of blocking (BLUS1) and restricting (RESTR1) as too similar, having a correlation greater than one. Therefore, BLUS1 was removed as an indicator variable for feature awareness. Due to

this adjustment, all covary relationships were removed that were added earlier in the CFA. Desired privacy level did not represent a significant path for privacy behavior (H1); in fact, the coefficient was negative. Similar to relationship connection boundaries, even though this finding negates the hypotheses from the general research model, it is more consistent with the qualitative findings. In general, SNS users reserved blocking for extreme cases and rarely blocked because an implied social stigma that it was rude to do so.

> "Blocking is major. That is why there are only so many people that I've blocked. Those are the people that I don't want them to be able to find me even if they are on your friend's list and I am on your friend's list they still can't see my information. They can't track me, they can't follow me, nothing. They don't have any rights to me whatsoever." –Dollie, Mother, 34

Risk awareness was a significantly and positively associated with desired privacy level (H5) and explained 46.8% of the variance in desired privacy level for interactional blocking boundaries. Feature awareness (H7) was a significant path for the dependent variable. However, it was in the opposite direction than I hypothesized. As suggested by the descriptive statistics, for high levels of feature awareness, use was low. Therefore, individuals who were aware of blocking and restricting still chose not to. A significant, yet unhypothesized, relationship was observed between burden and privacy behavior. For higher levels of burden, privacy behavior was reduced. Overall, the model explained a substantial amount of the variance of privacy behavior with an R^2 = 85.9%. However, this variance was predominantly explained through the negative relationship between feature awareness and privacy behavior. I believe that this result was due to the extremely skewed (right) nature of the dependent variable as both blocked and restricted users were rare. The goodness-of-fit statistics for this structural model were adequate at: χ^2 (143) =

212.36, p=<0.0001, RMSEA=0.049 (with a CI from 0.035 to 0.06), p=0.52, CFI=0.93, TLI=0.91, and SRMR=0.066.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 24: Structural Model for Direct Effects for Interactional Blocking Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=-0.036, p=0.34) and risk awareness (β=-0.02, p=0.6) were not significant moderators of desired privacy level and privacy behavior. Therefore, hypotheses 4 and 6 were rejected. The SEM in MPlus for hypotheses 8 did not converge. Therefore, it will also be addressed later in the post-hoc analysis. Burden (β=0.093, p=0.001) was found to be a significant moderator of feature awareness and privacy behavior (H9). I saw a main

effect of low burden that strengthened the relationship between feature awareness and privacy behavior across all levels of feature awareness.

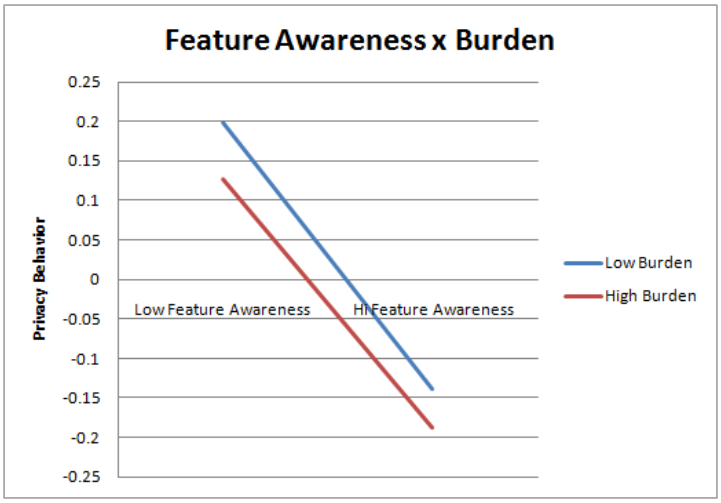
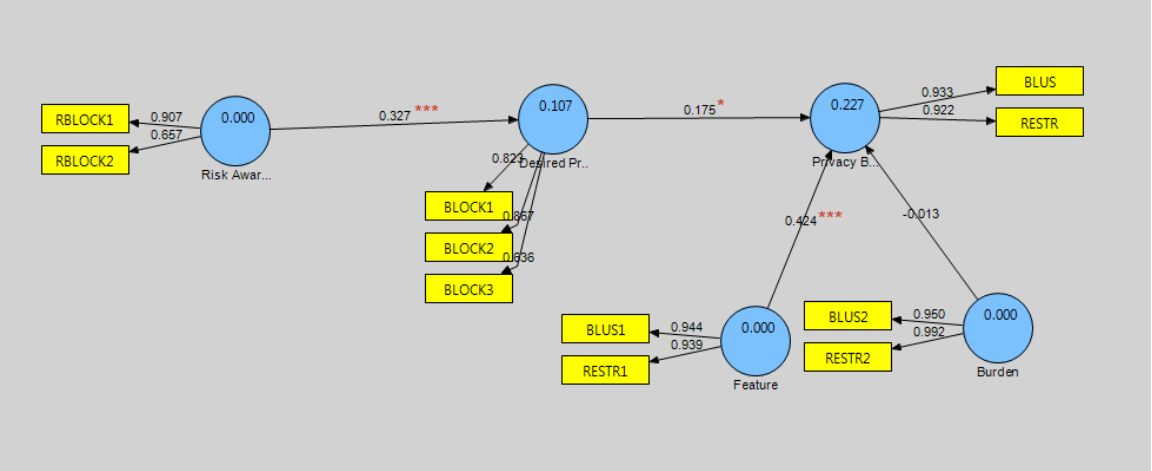


FIGURE 25: Moderation Effect of Burden on Feature Awareness and Privacy Behavior

Due to the counter-intuitive relationship between feature awareness and privacy behavior and also due to the non-normal distribution of the dependent variable, I re-analyzed this model through post-hoc analysis (FIGURE 26). In this model, the relationship between desired privacy level and privacy behavior is positive and significant (H1). In addition, the relationship between feature awareness and privacy behavior is also positive and significant (H7).



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 26: SmartPLS Model for Interactional Blocking

I also identified a significant moderating effect of feature awareness (β=611, p<=0.05) on desired privacy level and privacy behavior. I was unable, however, to graph the interaction because SmartPLS does not provide standard deviation values. I believe that the correct interpretation is that high levels of desired privacy coupled with high levels of feature awareness strengthen the relationship between desired privacy level and privacy behavior which would support the hypothesis. However, I will add this as a caveat as I was unable to graph the interaction. TABLE 34 summarizes the findings for this model.

TABLE 34: Result Summary for Interactional Blocking Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	ACCEPT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT (CAVEAT)
H9: Burden X Feature Awareness → Privacy Behavior	ACCEPT

6.7.10 Interactional Disabling Boundaries

The descriptive statistics for the scale items for risk awareness (RDIS1, RDIS2) and desired privacy level (DIS1, DIS2, DIS3) are presented in TABLE 35. While the risk awareness for potential privacy loss (RDIS1) was quite high, negative personal, past experiences (RDIS2) with interactional disabling boundary violations were generally lower. Overall, desired privacy level for disabling was also high.

TABLE 35: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RDIS1	302	3.61	1.599
RDIS2	305	2.88	1.519
DIS1	306	5.20	1.624
DIS2	305	4.90	1.637
DIS3	308	4.62	1.471
Valid N (listwise)	296		

I categorized one's chat settings (SCHAT) and frequency of going offline for chat (SCHATF) as interactional disabling behaviors. I also identified blocking application invites (BLAPI) and blocking event invitations as interactional disabling privacy

behaviors. The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 36).

TABLE 36: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
SCHAT	307	2.00	1.291
SCHAT1	305	2.07	.899
SCHAT2	303	3.22	1.686
SCHATF	305	3.74	2.303
BLAPI	304	1.67	1.137
BLAPI1	305	1.82	.904
BLAPI2	301	3.43	1.667
BLEV	306	1.26	.666
BLEV1	300	1.74	.869
BLEV2	298	3.47	1.658
Valid N (listwise)	279		

Chat settings presented themselves fairly dichotomously with 57.3% of the participants using the default of being visible to all friends when logged in and 25.7% going offline completely. It was rarer (17%) that participants fine tuned this setting (TABLE 37).

TABLE 37: SCHAT Settings

SCHAT Settings	Frequency	Valid Percent
All your friends see you except... (with no one listed)*	176	57.3%
All your friends see you except... (with one or more friends listed)	34	11.1%
Only some friends see you...	18	5.9%
No one sees you (go offline)	79	25.7%

* Default setting

Feature awareness followed a similar pattern with 43.9% definitely aware of the setting, 37% unaware, and 19% vaguely aware. Overall, blocking app (BLAPI) and event (BLEV) invites was rare (TABLE 38) though participants tended to block app invites more frequently than event invites. Practically, this makes sense because app invites tend to be more frequent making them more annoying to receive.

TABLE 38: Percentages for Blocking App Invites and Event Invites

Number of Users Blocked	BLAPI Percent	BLEV Percent
0	64.47	81.70
1-3	20.07	13.73
4-6	5.92	2.61
7-10	3.29	0.65
10 or More	6.25	1.31

In FIGURE 27 below, I standardized the scales for privacy behavior, feature awareness, and burden by multiplying each mean by the lowest common denominator. Using interactional disabling privacy behaviors was more common for managing chat boundaries than for invites. Overall, both feature awareness and burden were rated high.

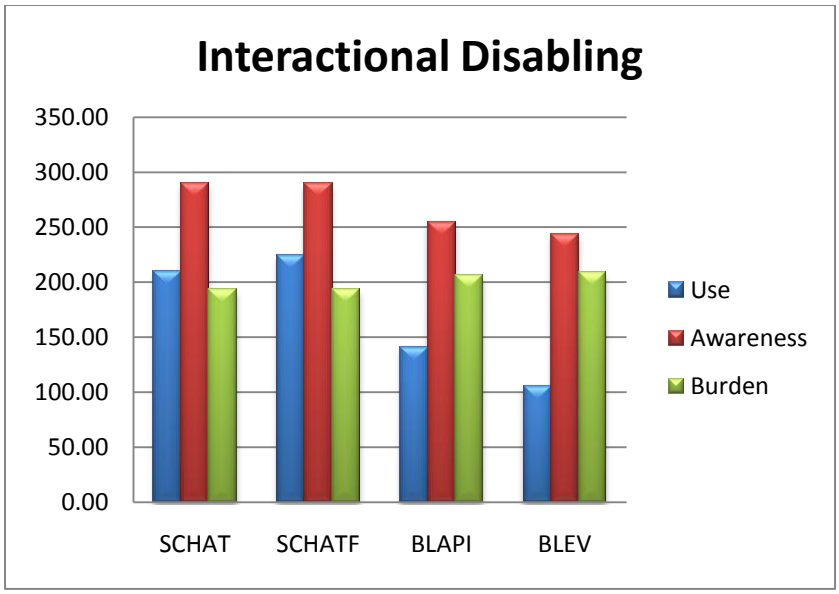
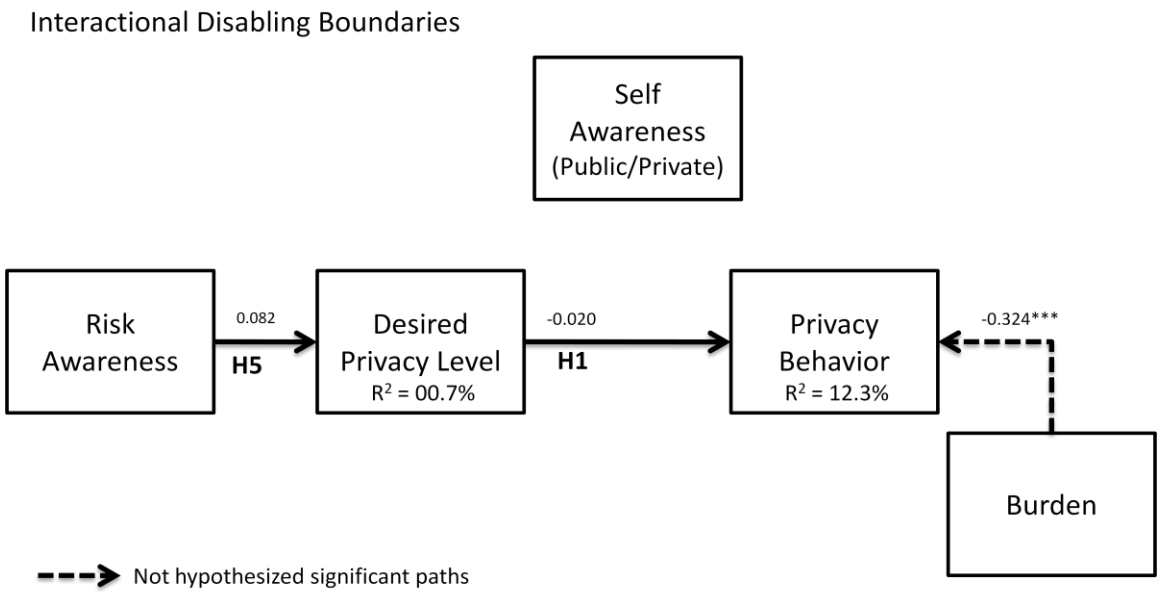


FIGURE 27: Privacy Behavior, Feature Awareness, and Burden

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Based on the initial CFA, I found that the chat variables (SCHAT, SCHATF) were not well suited for the model. This is probably due to the fact that they drastically depart from the assumption of normality and continuity due to their dichotomous nature. Therefore, all chat variables (including feature awareness and burden) were removed. RDIS2 and BLEV2 were also removed as indicator variables due to internal consistency problems. They both had standard coefficients greater than one, which suggested redundancy in their measurement. Finally, feature awareness had to be removed as a construct in the model because it shared a correlation greater than the absolute value of one with the dependent variable. However, this coefficient was negative, suggesting an inverse relationship between feature awareness and privacy behavior. A possible explanation is the fact that I saw a high level of feature awareness of these mechanisms but very low usage. After these adjustments,

the CFA for the final research model specific to interactional disabling indicates that the measures have appropriate convergent and discriminant validity with χ^2 (83) = 108.58, p=<0.03, RMSEA=0.04 (with a CI from 0.013 to 0.058), p=0.80, CFI=0.95, TLI=0.94, and SRMR=0.05. However, because I had to perform quite a bit of fitting to make this model suited for the data, this implies that post-hoc analysis will be necessary.

I ran a SEM for interactional disabling boundaries for direct effects (FIGURE 28). The initial SEM identified too much overlap in the indicator variables for privacy behavior (BLAPI, BLEV), and BLAPI was removed. Therefore, for the final analysis, only use (BLEV) and burden (BLEV2) of blocking event invites was examined. Consistent with the poor fit of the data based on the CFA, the overall model proved to be a bad fit for the data. Desired privacy level did not represent a significant path for privacy behavior (H1); in fact, the coefficient was negative. Risk awareness was not a significant mediator of desired privacy level (H5). Feature awareness (H7) was removed due to a high, negative correlation with privacy behavior. I interpret this to mean that even though participants were aware they could use these mechanisms, they actively chose not to. A significant, yet unhypothesized, relationship was observed between burden and privacy behavior. For higher levels of burden, privacy behavior was reduced. Overall, the model explained little of the variance of privacy behavior with an R^2 = 12.3%. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (98) = 117.63, p=<0.0861, RMSEA=0.032 (with a CI from 0.000 to 0.052), p=0.93, CFI=0.96, TLI=0.95, and SRMR=0.055.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 28: Structural Model for Direct Effects for Interactional Disabling Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (β=-0.019, p=0.87) and risk awareness (β=0.031, p=0.5) were not significant moderators of desired privacy level and privacy behavior. Therefore, hypotheses 4 and 6 were rejected. Hypotheses 7, 8, and 9 were rejected with a caveat because feature awareness was removed from the model. Thus, none of the hypotheses for this model were supported. Yet, burden was found to be a significant moderator (β=-0.177, p=0.08) of desired privacy level and privacy behavior (not hypothesized). I saw a main effect of low burden that increased the relationship with privacy behavior across all levels of desired privacy level (FIGURE 29).

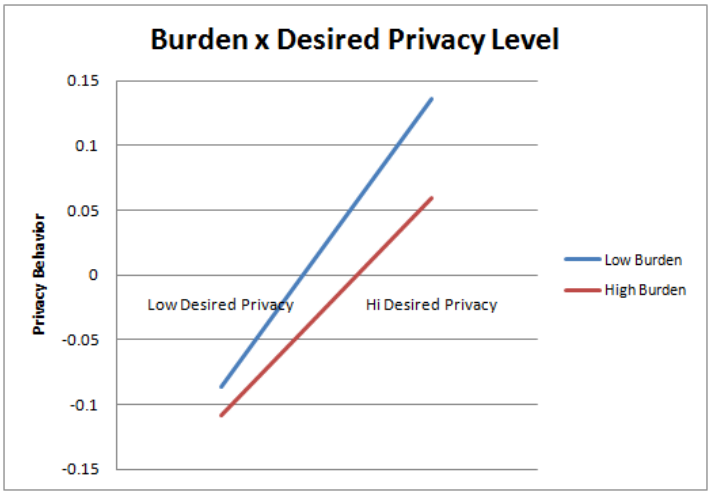
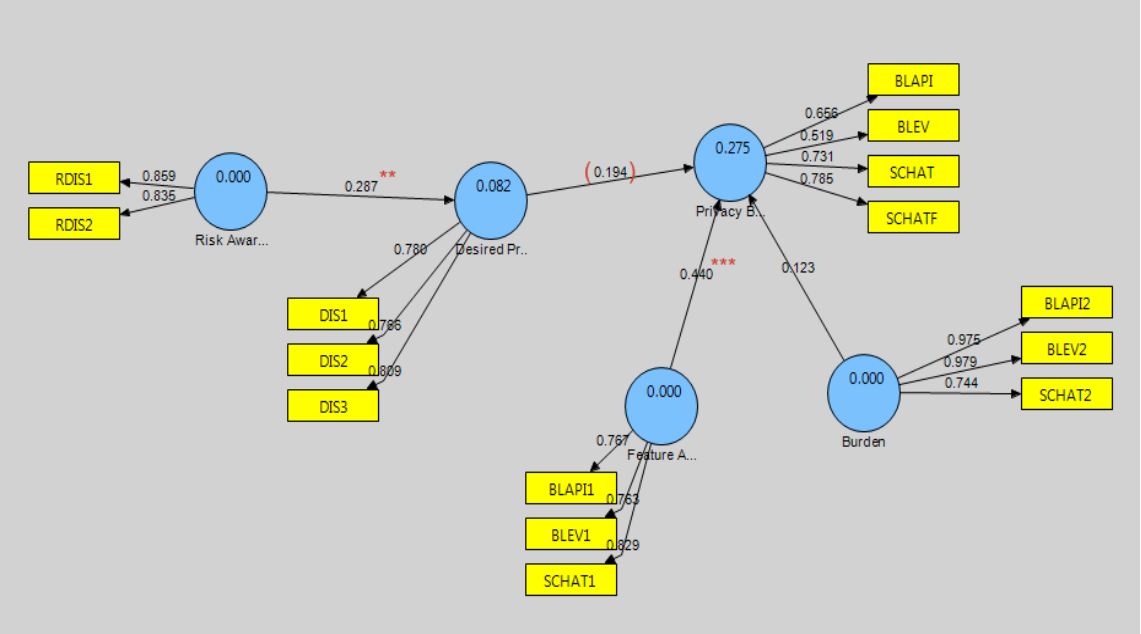


FIGURE 29: Moderation Effect of Burden on Desired Privacy Level and Privacy Behavior

Overall, I believe that this model was problematic due to highly skewed data. Therefore, I performed a post-hoc analysis using SmartPLS (FIGURE 30). In this model, the relationship between desired privacy level and privacy behavior was positive and significant at the $p = 0.10$ level. Therefore, hypothesis 1 was accepted with a caveat. Risk awareness was significantly and positively related to desired privacy level (H5). Also, feature awareness was significantly and positively related to privacy behavior, supporting hypothesis 7. I was able to test hypotheses 8, a moderating effect of feature awareness on desired privacy level, and the relationship was not significant. Hypothesis 9 was also not supported. TABLE 39 summarizes the updated findings for this model.



p <= 0.1 * p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 30: SmartPLS Model for Interactional Disabling

TABLE 39: Result Summary for Interactional Disabling Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	ACCEPT (Caveat)
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.11 Confidant Disclosure Boundaries

The descriptive statistics for the scale items for risk awareness (RCONF1, RCONF2) and desired privacy level (CONF1, CONF2, CONF3) are presented in TABLE 40. The potential of privacy loss through confidant disclosures (RCONF1) was high

while actual past negative experiences (RCONF2) was rated lower. Overall, desired privacy level over confidant disclosures was quite high.

TABLE 40: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RCONF1	304	5.06	1.444
RCONF2	304	2.98	1.552
CONF1	305	6.20	1.040
CONF2	307	5.02	1.689
CONF3	308	5.68	1.157
Valid N (listwise)	297		

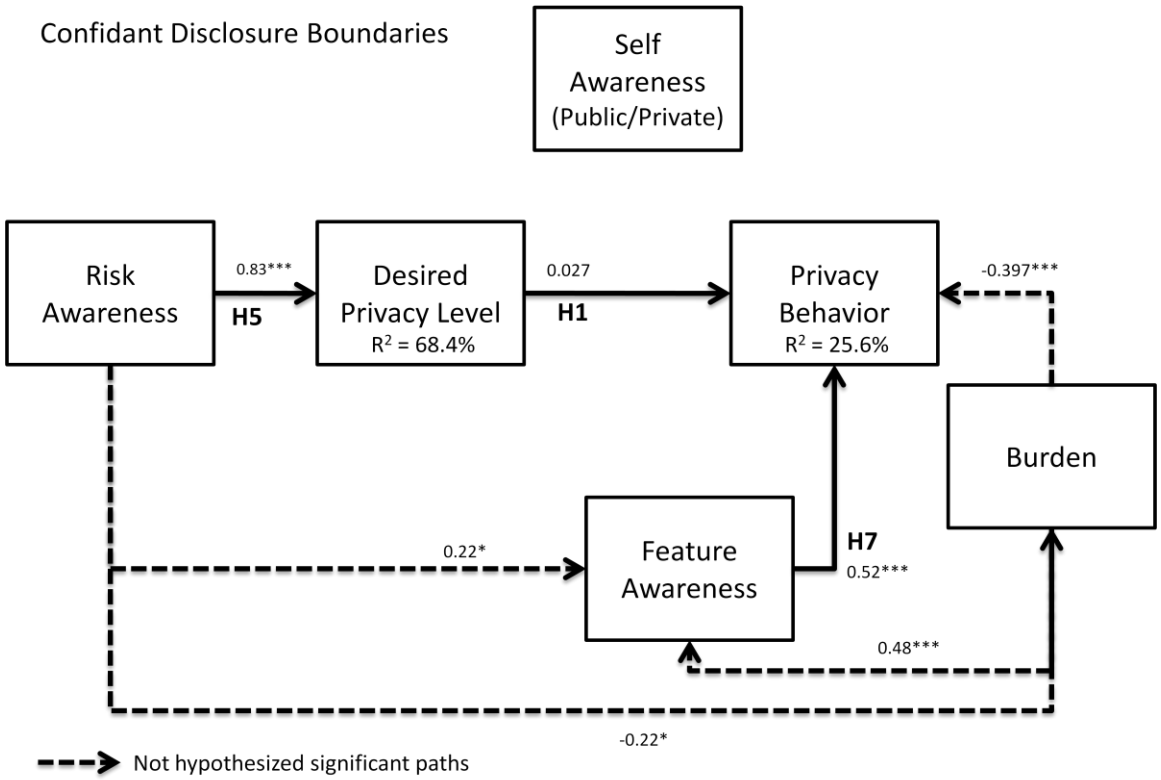
I operationalized mechanisms to support confidant disclosure boundaries on Facebook as the same as the mechanisms that support outward-facing territorial boundaries. Therefore, Wall/Timeline modifications (CWAL), untagging (UNTAG), and asking a friend to take down a photo or post (TAKED) all represent confidant disclosure boundary mechanisms. Please refer to outward-facing territorial boundaries for descriptive statistics (TABLE 18). I performed a CFA to confirm construct validity of the measures. The same adjustments were made to the model as described for outward-facing territorial boundaries. After these adjustments, the CFA for the final research model specific to confidant disclosure boundaries indicates adequate convergent and discriminant validity with χ^2 (231) = 351.77, p=<0.0000, RMSEA=0.051 (with a CI from 0.04 to 0.06), p=0.42, CFI=0.92, TLI=0.90, and SRMR=0.066.

Next, I ran a SEM for confidant disclosure boundaries for direct effects (FIGURE 28). Desired privacy level did not represent a significant path for privacy behavior; therefore, hypothesis 1 was rejected. Similar to outward-facing territories, an explanation

for this lack of relationship may be that individuals modify their Walls and untag content due to various other reasons that privacy. For instance, Lynn is okay with friends tagging pictures of her that are flattering, but she does not like pictures posted that she does not like. This may be an issue of self presentation more so than privacy.

> "Yes, a lot, I hate my pictures. The one's when I was little, I'm beginning to deal with those, but just about… I do not have good facial expressions. If I think I am ugly, ugly, ugly in a picture, I will untag myself or beg that person to delete it." –Lynn, Photographer, 30

Unfortunately, it is difficult for us to tease out one's motivation for performing actions that can be congruent with confidant disclosure privacy behaviors. Risk awareness was significantly and positively associated with desired privacy level (H5) and explained 68.4% of the variance in desired privacy level. Feature awareness (H7) was strongly associated with privacy behavior with a $\beta = 0.52$. Overall, I was able to explain a decent amount of the variance of privacy behavior in the model. I observed an $R^2 =$ 25.6%. The goodness-of-fit statistics for the structural model were adequate at: χ^2 (235) = 356.55, p=<0.0000, RMSEA=0.05 (with a CI from 0.04 to 0.06), p=0.44, CFI=0.92, TLI=0.90, and SRMR=0.067.



* p <= 0.05, ** p <= 0.01, *** p <= 0.001

FIGURE 31: Structural Model for Direct Effects for Confidant Disclosure Boundaries

Next, I tested for latent interactions using a step-wise analysis. Self awareness (H4, β=0.34, p=0.34) and feature awareness (H8, β=0.537, p=0.154) were not significant moderator of desired privacy level and privacy behavior. I also found that burden (H9, β=-0.365, p=0.546) was not a significant moderator of feature awareness and privacy behavior. At the p=0.085 level, risk awareness moderated (β=1.174) desired privacy level and privacy behavior. FIGURE 32 shows a main effect of risk awareness such that heightened levels of risk awareness strengthen the relationship between desired privacy level and privacy behavior. Therefore, I feel this is an appropriate caveat to add for H1. I also tested for hypotheses 2 and 3 which suggested that low levels of public self-awareness coupled with high levels of private self-awareness were negatively associated

with both desired privacy level and privacy behavior for confidant disclosure. As it turns out public and private self-awareness have neither significant direct or moderating effects on desired privacy level or privacy behavior. Therefore, I rejected the hypotheses. However, I believe that this result might be related to the poor construct validity in the operationalization of self-awareness. The overall results are summarized in TABLE 41.

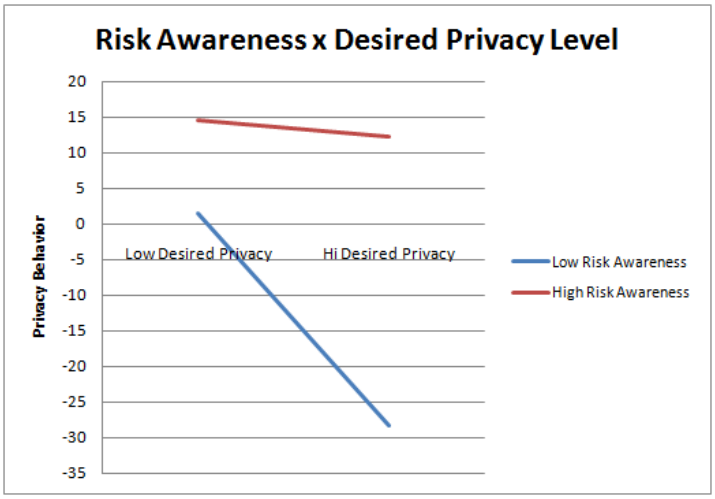


FIGURE 32: Interaction Effect of Risk Awareness x Desired Privacy Level

TABLE 41: Result Summary for Confidant Disclosure Boundaries

Hypothesis	Outcome
H1: Desired Privacy Level → Privacy Behavior	REJECT (Caveat)
H2: Public Self-Awareness X Private Self-Awareness → Desired Privacy Level	REJECT
H3: Public Self-Awareness X Private Self-Awareness → Privacy Behavior	REJECT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	ACCEPT (Caveat)
H7: Feature Awareness → Privacy Behavior	ACCEPT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.7.12 Self-Disclosure Boundaries

The descriptive statistics for the scale items for risk awareness (RSELF1, RSELF2) and desired privacy level (SELF1, SELF2, SELF3) for self disclosure boundaries are presented in TABLE 42. Participants reported the potential for privacy loss from self disclosure (RSELF1) to be high while actual past negative experiences (RSELF2) were reportedly lower. Overall, desired privacy level for self disclosure boundaries was high.

TABLE 42: Descriptive Statistics for Risk Awareness and Desired Privacy Level

	N	Mean	Std. Deviation
RSELF1	304	5.62	1.374
RSELF2	305	3.08	1.602
SELF1	307	6.31	1.143
SELF2	305	6.54	.823
SELF3	308	5.23	1.402
Valid N (listwise)	299		

I operationalized mechanisms to support self disclosure boundaries on Facebook as an individual's privacy settings for "Basic Info" and "Contact Info" from his or her Facebook profile. Basic information included Interested In (BADIN), Religion (BARE), Political Views (BARPO), Birthday (BASBD), and Relationship Status (BAST). Contact information included email address (CIEM), street address (CIAD), IM screen name (CIIM), mobile phone (CIMOB), and other phone (CIOP). I was surprised to see that most participants had changed their default privacy settings. With the exception of email address, the majority of Facebook users reported privacy settings more restrictive than Facebook's privacy defaults (TABLE 43).

TABLE 43: Default versus Customized Behaviors for Self Disclosure Boundaries

	Customized	Default
BASBD	89.90%	10.10%
BADIN	91.40%	8.60%
BAST	84.90%	15.10%
BARE	91.40%	8.60%
BARPO	93.30%	6.70%
CIEM	34%	66%
CIMOB	74.90%	25.10%
CIOP	87.80%	12.20%
CIIM	75.70%	24.30%
CIAD	87.20%	12.80%

In many cases, participants chose to not even provide the information on Facebook. For instance, 45.7% did not provide Interested In (BADIN), 21.3% Relationship Status (BAST), 45.4% Religion (BARE), 46.8% Political Views (BARPO), 54.1% mobile (CIMOB), 77.6% other phone (CIOP), 67.2% IM screen name (CIIM), and 78.4% street address (CIAD). The data distributed itself fairly dichotomously with participants more frequently setting their privacy settings to "Friends" or not providing the information at all. Based on these descriptive statistics, it suggests that participants' high desired privacy level for self disclosure is represented in their privacy behaviors. However, due to highly skewed, dichotomous data, I expect the SEM model will have a difficult time fitting this data based on assumptions of normal, continuous data. The descriptive statistics for privacy behavior, feature awareness, and burden are below (TABLE 44). However, due to the dichotomous distributions of many of the indicator items for the dependent variable, mean and standard deviation poorly describe the data.

TABLE 44: Descriptive Statistics for Privacy Behavior, Feature Awareness, and Burden

	N	Mean	Std. Deviation
BASBD	307	2.47	1.112
BADIN	304	3.41	1.554
BAST	305	2.61	1.368
BARE	302	3.39	1.555
BARPO	299	3.47	1.524
BA1	303	2.66	.647
BA2	304	3.26	1.658
CIEM	306	2.45	1.110
CIMOB	303	3.97	1.294
CIOP	303	4.49	1.045
CIIM	305	4.13	1.305
CIAD	305	4.48	1.076
CI1	303	2.65	.648
C12	306	3.19	1.641
Valid N (listwise)	281		

In FIGURE 33 below, I standardized the scales for privacy behavior, feature awareness, and burden by multiplying each mean by the lowest common denominator. Self disclosure behaviors are fairly high as well as the feature awareness of these mechanisms. Overall, burden of mechanism use was rated fairly low.

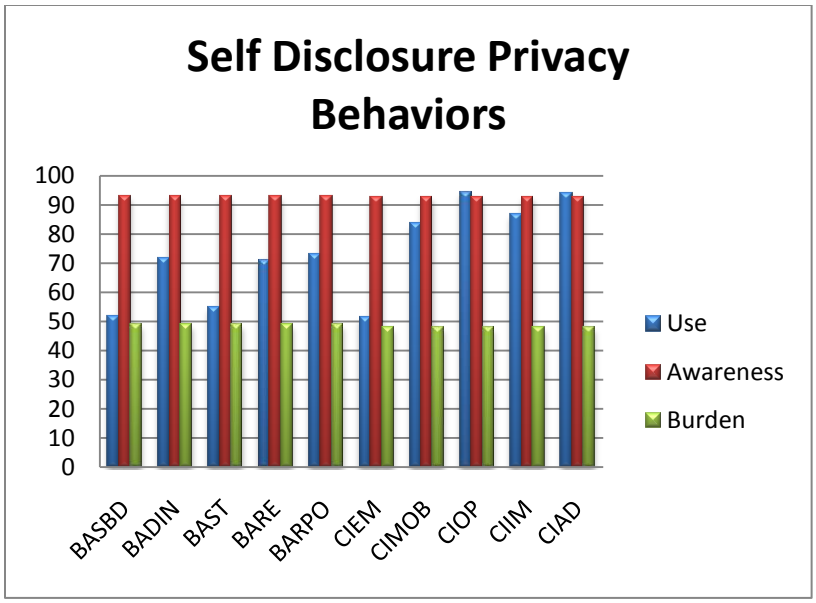


FIGURE 33: Privacy Behavior, Feature Awareness, and Burden

After interpreting the descriptive statistics, I performed a CFA to confirm construct validity of the measures. Due to errors in MPlus output, I had to use the MLM estimator for MPlus due to the dichotomous nature of the data. Birthday (BASBD) and email address (CIEM) were removed due to low internal consistency with the other indicator variables. This makes sense because Facebook requires users to enter in a birthday and email address in order to create an account. Therefore, these two indicator variables do not truly represent an individual's chosen privacy behaviors. Interested in (BADIN) was also removed for loading too high with street address (BAST). Finally, I had to model privacy behavior, feature awareness, and burden for basic information and contact information as two completely separate constructs. Modeling indicator variables for basic info and contact info on the same first order construct was a poor fit to the data. Modeling basic info and contact info as second order constructs for privacy behavior, feature awareness, and burden resulted in a model that failed to converge. While it is

plausible that self-disclosure is theoretically a multi-dimensional construct, it is interesting to note that Facebook's explicit groupings for privacy settings trumps theoretical meaning for this model. Therefore, future research should examine the impact of how SNSs group various privacy settings and their impact on overall behavior. The initial findings suggest that privacy settings grouped on the same web page evoke more similar privacy behaviors even though they may be very theoretically divergent. After these adjustments, the CFA for the final research model specific to self disclosure boundaries indicates that the measures have appropriate convergent and discriminant validity with χ^2 (195) =232.28 , p=<0.035, RMSEA=0.034 (with a CI from 0.01 to 0.049), p=0.96, CFI=0.96, TLI=0.95, and SRMR=0.06.

Next, I ran two SEMs for self-disclosure boundaries for direct effects specific to basic info and contact info (FIGURE 34). Based on the initial SEM for basic info, I had to remove Political Views (BARPO) and Religious Views (BARE) because all the indicator variables for basic info were too similar. Therefore street address (BAST) was the only indicator variable left in the analysis for basic info privacy behavior. While this model (FIGURE 34) produced a good fit with χ^2 (127) =148.8, p=<0.091, RMSEA=0.031 (with a CI from 0.00 to 0.05), p=0.95, CFI=0.95, TLI=0.94, and SRMR=0.06, it had very low predictive power for the dependent variable (R^2 = 6.4%). Risk awareness was a significant path to desired privacy level which supported hypothesis 5, but none of the other hypotheses were supported in this model. In fact, the relationship between feature awareness and privacy behavior was significantly negative. I believe the reason for this finding is that individuals who were previously unaware of the

feature simply did not provide the information. Yet, I coded this behavior as the most restrictive type of privacy behavior.

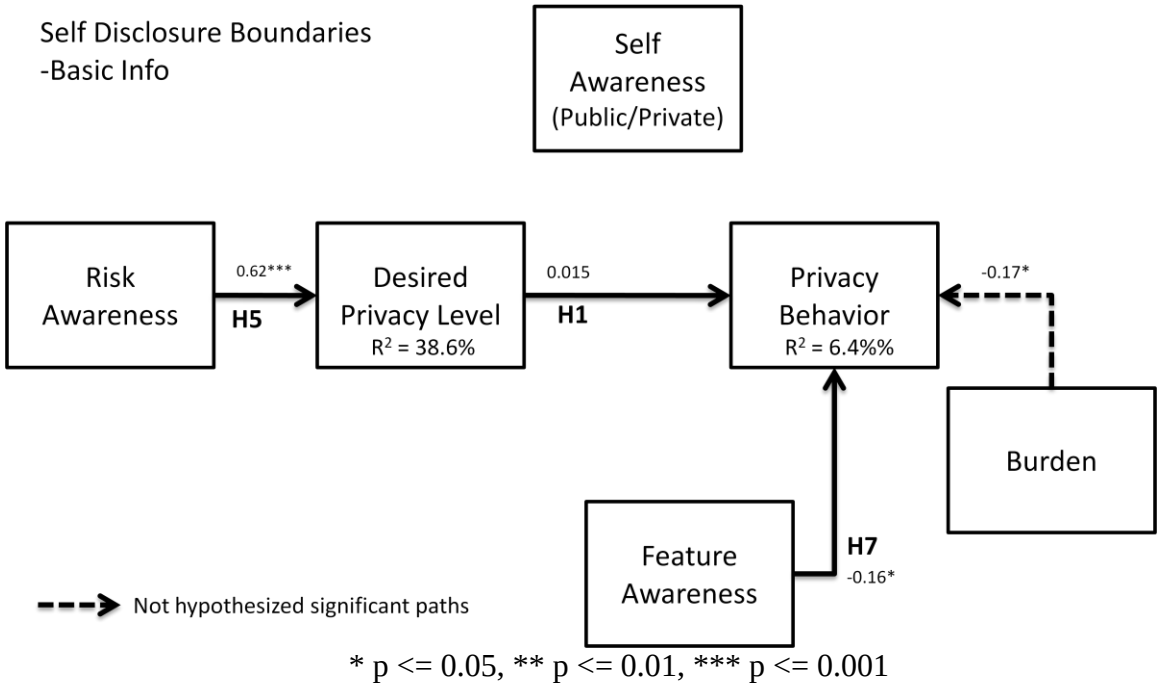


FIGURE 34: Structural Model for Direct Effects for Self Disclosure, Basic Info Boundaries

The analysis of interaction effects for basic info self disclosure did not find self awareness (β=-0.109, p=0.4) and risk awareness (β=-0.10, p=0.88) to be significant moderators of desired privacy level and privacy behavior. However, feature awareness (β=-0.077, p=0.006) significantly moderated the relationship between desired privacy level and privacy behavior (FIGURE 35). For low levels of desired privacy, across all levels of feature awareness, privacy behavior was more strongly associated with desired privacy level. However, there was a negative relationship between desired privacy level and privacy behavior for high levels of desired privacy. While this is an interesting

interaction, I still rejected hypothesis 8 because increased feature awareness did not lead to a stronger relationship between desire and behavior.

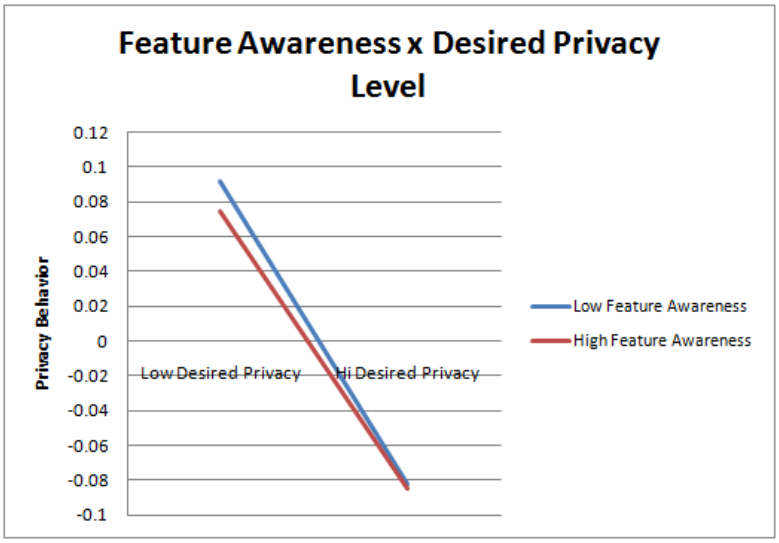


FIGURE 35: Interaction Effect of Feature Awareness x Desired Privacy Level

Burden (β=0.018, p=0.65) was not a significant moderator of feature awareness and privacy behavior (H9). Finally, I tested for the relationship of public and private self awareness on desired privacy level and privacy behavior (H2 & H3). I did not find any direct or moderating effects of either type of self awareness on either of these constructs.

Next, I performed the same analysis for contact info self disclosure boundaries (FIGURE 36). For this model, I had the opposite results. While the model was able to explain a large amount of the variance in the dependent variable (R^2 = 86.1%), the fit of the model was not very good at χ^2 (180) =286.38 , p=<0.0000, RMSEA=0.058 (with a CI from 0.045 to 0.071), p=0.14, CFI=0.90, TLI=0.88, and SRMR=0.074. No modification indices were reported greater than 25, so I chose to leave the model as is. Although weak, I did find a significant, positive path from desired privacy level to privacy behavior (H1)

for contact info. The different outcomes between basic info and contact info may be due to Facebook signaling users that basic info is a social norm for sharing whereas individuals may feel more at liberty to protect contact info. Risk awareness explained a significant (R^2 = 54.5%) amount of the variance of desired privacy level (H5). I saw a strong negative influence of feature awareness on privacy behavior which was contrary to the relationship I hypothesized (H7). Similar to basic info, I believe the reason for the negative relationship is due to the coding of missing profile information as privacy restrictive.

For the analysis of interaction effects, I was unable to use the MLM estimator for non-normal data with the requirements necessary to test interaction effects (TYPE=RANDOM). Therefore, I was unable to test hypotheses 4, 6, and 8 as the data could not be estimated under the assumptions of normality. I was able to successfully run an interaction analysis for burden as a moderator of feature awareness and privacy behavior (H9). However, the effect was not significant (β=-0.01, p=0.24). Finally, I tested for the relationship of public and private self awareness on desired privacy level and privacy behavior (H2 & H3). Similar to basic info, I did not find any direct or moderating effects of either type of self awareness on either of these constructs. TABLE 45 summarizes the findings for this model.

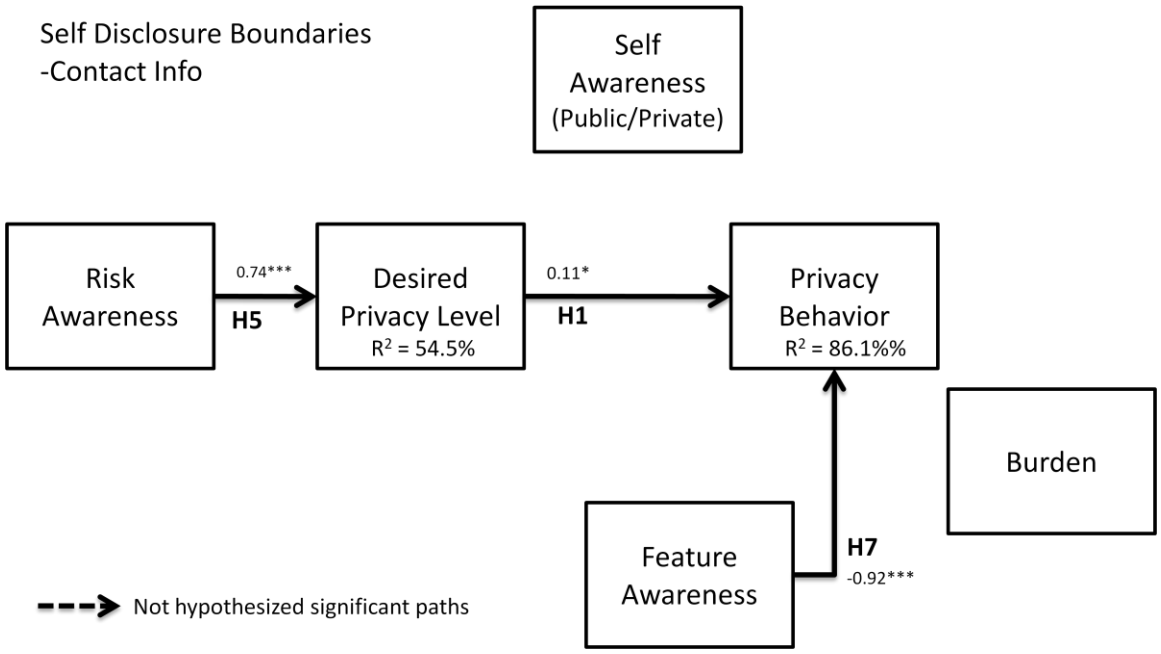


FIGURE 36: Structural Model for Direct Effects for Self Disclosure, Contact Info Boundaries

Due to all the difficulties I had in the MPlus analysis, I did a post-hoc analysis using Smart PLS. For the SmartPLS model, I was able to combine the analysis for basic info and contact info (FIGURE 37). Based on this model, desired privacy level to privacy behavior was a significant path, supporting hypothesis 1. I also retested all moderating effects and found no significant moderators. TABLE 45 summarizes the findings for this model based on the SmartPLS results.

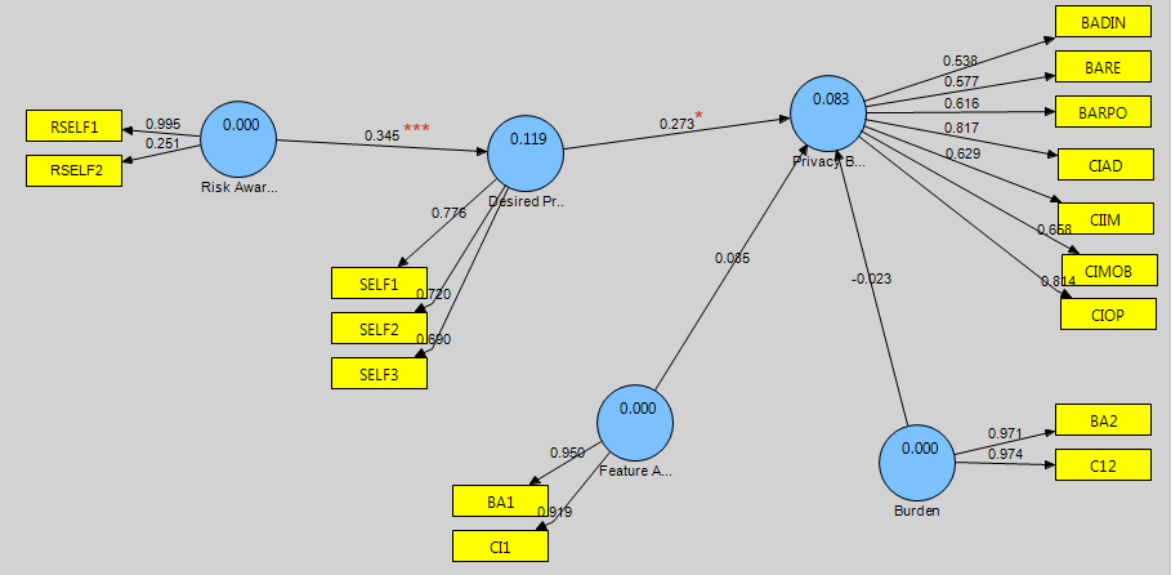


FIGURE 37: SmartPLS model for Self Disclosure

I believe the lack of relationship between feature awareness and privacy behavior is because SNS users are well aware of these privacy settings. Therefore, it has little overall impact on use.

TABLE 45: Result Summary for Self Disclosure Boundaries

Hypothesis	**Outcome**
H1: Desired Privacy Level → Privacy Behavior	ACCEPT
H2: Public Self-Awareness X Private Self-Awareness → Desired Privacy Level	REJECT
H3: Public Self-Awareness X Private Self-Awareness → Privacy Behavior	REJECT
H4: Self Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H5: Risk Awareness → Desired Privacy Level	ACCEPT
H6: Risk Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H7: Feature Awareness → Privacy Behavior	REJECT
H8: Feature Awareness X Desired Privacy Level → Privacy Behavior	REJECT
H9: Burden X Feature Awareness → Privacy Behavior	REJECT

6.8 Summary Results

I tested the general research model across each of ten theoretically derived boundary types: inward-facing territorial (IN), outward-facing territorial (OUT), network discovery (DISC), network intersection (INTER), relationship context (CONT), relationship connection (CONN), interactional blocking (BLOCK), interactional disabling (DIS), confidant disclosures (CONF), and self disclosure (SELF). Theory surrounding the research model is still new, so I will present both the confirmatory results from the research model as well as some interesting exploratory results. First, TABLE 46 summarizes the confirmatory analysis based on the model hypotheses.

TABLE 46: Hypotheses Testing Summary Results

	IN	OUT	DISC	INTER	CONT	CONN	BLOCK	DIS	CONF	SELF
H1	A	(R)	A	R	R	(R)	A	(A)	(R)	A
H2	--	--	--	--	--	--	--	--	R	R
H3	--	--	--	--	--	--	--	--	R	R
H4	R	R	R	R	R	A	R	R	R	R
H5	A	A	A	A	A	A	A	A	A	A
H6	R	A	R	R	R	(A)	R	R	(A)	R
H7	(A)	A	A	A	A	A	A	A	A	R
H8	(R)	R	R	R	R	(A)	(A)	R	R	R
H9	(R)	R	R	R	R	R	A	R	R	R

A=Accept, R=Reject, ()=Caveat

TABLE 47 summarizes the standardized beta coefficients for privacy behavior regressed on desired privacy level, feature awareness, and burden. Overall the models were able to explain a good deal of the variability in technology-supported privacy behaviors.

TABLE 47: Path Coefficients and R^2 for Privacy Behavior

Boundary Type	β (Desired Privacy Level)	β (Feature Awareness)	β (Burden)	R^2 (Privacy Behavior)
Inward-Facing Territorial	0.38***	>1	0.668***	61.6%
Outward-Facing Territorial	---	0.56***	-0.44***	28.3%
Network Discovery^	0.24*	0.31***	---	17.3%
Network Intersection	---	0.73***	---	50.5%
Relationship Context	---	0.70***	---	52.7%
Relationship Connection	---	0.52***	---	21.4%
Interactional Blocking^	0.18*	0.42***	---	22.7%
Interactional Disabling^	(0.19)	0.44***	---	27.5%
Confidant Disclosure	---	0.52***	-0.397***	25.6%
Self Disclosure	0.27*	---	---	8.3%

( ) p <= 0.10 * p <= 0.05, ** p <= 0.01, *** p <= 0.001 ^ Results from post-hoc using SmartPLS

6.8.1 Desired Privacy Level and Privacy Behavior

For hypothesis 1, which predicted a positive association between desired privacy level and technology-supported negotiation behaviors, I had mixed results. For about half of the boundary types (inward-facing territories, network discovery, interactional blocking, interactional disabling, and self disclosure) I found some significant relationship between one's desired privacy level and one's privacy behaviors. For three of the models (outward-facing territories, relationship connection, and confidant disclosures), the relationship between desired privacy level and privacy behaviors was contingent on various moderating factors. For outward-facing territories, high levels of perceived risk and low perceived burden strengthened the relationship between desire and behavior. For relationship connection, self awareness, risk awareness, and feature

awareness all had an impact on the relationship. Finally, for confidant disclosures, high levels of risk awareness strengthened the relationship between desire and behavior.

For the remainder of the boundary types (network intersection and relationship context), I did not find any relationship between desired privacy level and privacy behaviors. I can interpret this result in various ways. First, I could say that this finding supports past "Privacy Paradox" research that found no relationship between privacy attitudes and behavior. It is possible that people are simply throwing out reason and no longer letting their actions be a reflection of their beliefs or intentions. Possibly, sharing has truly become the new social norm regardless of what people say they want. Second, I could suggest that additional moderating factors need to be examined as I saw significant latent interactions from risk awareness, self awareness, feature awareness, and burden in some of the other models. Third, and what I believe to be true, a disconnect between desired privacy level and technology-supported privacy behaviors may signal the need for improved interface design. In this specific case, the creation and use of friend lists to manage relationship context and network intersection boundaries may not be adequate controls for meeting one's privacy needs.

6.8.2 Self-Awareness, Desired Privacy Level, and Privacy Behavior

Hypothesis 4, which predicted self awareness as a moderator to desired privacy and behavior, was only significant in the case of relationship connection boundaries. This is an interesting result if related back to the qualitative findings. Relationship connection boundaries tended to get complicated by peer pressure and participants ended up accepting more "friends" into their networks than they really wanted. It makes sense that only individuals who have a high level of self-awareness would be able to successfully

combat this peer pressure and act in their own interests. I also found no support for hypotheses 2 and 3 which predicted a direct influence of public and private self-awareness on desired privacy level and privacy behavior specific to disclosure boundaries. As for the majority of non-significant results of self-awareness, I believe a contributing factor was the lack of construct validity observed in the latent variable. Although I used a pre-validated measure, the CFA suggested that it was not stable within this context. Future research may want to pursue a more robust operationalization for self-awareness in respect to SNSs.

6.8.3 Risk Awareness and Desired Privacy Level

Hypothesis 5, a positive association between risk awareness and desired privacy level, found the most consistent support and was accepted across all ten of the boundary types (TABLE 48). Risk awareness explained over fifty percent of the variance in desired privacy level for network intersection and confidant disclosure boundaries. These results confirm that risk awareness is a significant factor of an individual's desired privacy level, but they also suggest that other untested factors also contribute to one's desired privacy level.

TABLE 48: Path Coefficients and R^2 for Risk Awareness and Desired Privacy Level

Boundary Type	Standardized Beta (β)	R^2 (Desired Privacy Level)
Inward-Facing Territorial	0.532***	28.3%
Outward-Facing Territorial	0.34**	11.4%
Network Discovery^	0.51***	25.5%
Network Intersection	0.78***	60.2%
Relationship Context	0.41***	16.8%
Relationship Connection	0.33***	11.1%
Interactional Blocking^	0.33***	10.7%
Interactional Disabling^	0.29**	8.2%
Confidant Disclosure	0.83***	68.4%
Self Disclosure^	0.35***	11.9%

* p <= 0.05, ** p <= 0.01, *** p <= 0.001 ^ Results from post-hoc using SmartPLS

In addition to having a direct effect on desired privacy level, there were also cases where risk awareness moderated the relationship between desired privacy level and privacy behavior (H6). For outward-territorial, relationship connection, and confidant disclosure boundaries, heightened levels of risk awareness tended to strengthen the relationship between desired privacy level and privacy behavior. In these cases, I believe that risk awareness acts as an additional motivator for individuals to find ways to act in support of their privacy desires.

6.8.4 Feature Awareness and Privacy Behavior

Overall, feature awareness was the most significant contributor to individual's SNS privacy behaviors (H7). The relationship between feature awareness and privacy behavior was both significant and positive across the majority of the boundary types. In the case of inward-facing territorial boundaries, it was so related to privacy behavior that MPlus characterized the two as the same construct. In most cases, the unstandardized

beta coefficients of feature awareness regressed on privacy behavior were greater than 0.50, suggesting a very strong effect size (TABLE 47).

Feature awareness was only insignificant in the case of self disclosure boundaries. I believe that this is the case because I operationalized technology-supported privacy behaviors by one's privacy settings for contact info and basic info. Because self disclosure has been framed by past research as synonymous to SNS privacy and because these features are so well known, it makes sense that feature awareness plays little role in privacy behaviors. While feature awareness had a strong direct effect on privacy behaviors for the majority of the boundary types, it only had one moderating effect on the relationship between desired privacy level and privacy behavior (H8). This was for relationship connection boundaries. This may signify a feature awareness problem preventing some individuals from using relationship connection privacy mechanisms to meet their desired privacy level.

6.8.5 Burden and Privacy Behavior

I also saw some unexpected results in the relationship between burden, privacy behavior, and the other latent variables. While I did not explicitly hypothesize direct effects of burden on privacy behavior, this relationship was implied through the hypothesis of moderation. TABLE 47 shows that burden exhibited significant direct effects on privacy behavior for three of the boundary types (inward-facing territorial, outward-facing territorial, and confidant disclosures). For the most part, the beta coefficients suggest a negative relationship between burden and privacy behaviors. High levels of burden deterred individuals from using certain privacy mechanisms. An interesting observation is that burden as a construct may be confounded by feature burden

and psychological burden. For instance, mechanisms for outward-facing territorial (untagging, asking a friend to take down a photo, etc.) and relationship connection (unfriending, hiding, etc.) are not generally that hard to do within Facebook's interface. However, the negative betas for burden for these boundaries are large. While the feature burden may not be high, it is possible that the psychological burden of pushing back on one's friends increases this level of burden.

Burden only significantly moderated feature awareness and privacy behavior in the direction I predicted in the case of interactional blocking (TABLE 46). Lower levels of burden strengthened the relationship between desired privacy level and privacy behavior, and high levels of burden reduced it (H9). In two cases (inward-facing territories and interactional disabling), I saw the opposite, yet significant, moderation effect where high burden actually strengthened the relationship. I believe that this uncovered a nuance in the conceptualization of burden. For certain types of interface controls, individuals who assess burden but have not used the feature in the past report lower levels of anticipated burden than the amount of actual burden reported by individuals who have actually used the privacy mechanism before. This is further supported by the significant and positive association between feature awareness and burden in many of the models.

6.8.6 Additional Exploratory Results

I found some unpredicted associations between the latent variables that are notable. The first significant association that I already mentioned, for instance, was the positive association between feature awareness and burden that I observed in a good number of the boundary models. Also, I saw a few occasions when self awareness was

significantly associated with risk awareness and risk awareness was significantly associated with feature awareness. It makes sense that an individual who has a higher level of risk awareness would be more motivated to find technology-supported mechanisms within Facebook's interface. Consistent with the interviews, sometimes individuals sought out privacy mechanisms once they experienced a negative privacy outcome. In a few cases, risk awareness was negatively associated with burden. Possibly, if an individual perceives a high level of risk, they could psychologically reduce the associated level of burden because the cost of privacy loss is higher than the effort needed to protect.

6.9 Discussion

In this chapter, I tested a general model of self awareness, risk awareness, desired privacy level, feature awareness, burden, and privacy behavior across the ten boundary types in the original taxonomy. The varying results across the ten models supports the theory that different types of privacy boundaries have their own unique characteristics. However, some common and important themes emerged from these models. First, feature awareness was by far the most important construct in the model in terms of explaining the variance in privacy behaviors. I did not anticipate that feature awareness would outweigh the effects of one's desired privacy level. These research findings reinforce the fact that feature awareness is a prerequisite for mechanism use. Therefore, in SNS interfaces such as Facebook's that change rapidly, strategies need to be developed for educating SNS users on how to properly use privacy mechanisms or at least make them aware that they even exist. Second, I consistently found clear support that risk awareness contributes to one's desired privacy level. Overall, I had mixed results when

trying to unpack the "Privacy Paradox" itself. In some cases, I found that SNS desired privacy level was reflected in one's technology-supported privacy behaviors. In other cases, there was not a significant relationship. Still in others, factors such as self awareness, risk awareness, feature awareness, and burden moderated this relationship.

Another unanticipated finding was that desired privacy level for privacy behaviors operationalized as actual behaviors (frequency of unfriending, deleting Wall posts, unsubscribing from News Feeds, etc.) were more strongly and significantly related than desired privacy was to privacy behaviors characterized as privacy settings. Issues occurred because settings are often "lumpy" in nature with frequencies of use that present themselves dichotomously instead of on a continuous scale. Privacy settings may be an outdated design that poorly approximates SNS users' actual privacy behaviors and new design solutions should be explored.

It is important that I mention a few of the limitations of this study. First, the data collection resulted in privacy behavior measures that were often non-normally distributed and skewed left, right, or even dichotomously. These distributions often resulted from privacy settings that are "lumpy" with default settings that further degrade the approximation of privacy settings to behavior. Therefore, covariance based SEM analysis was not the optimal statistical method for examining some of these complex relationships. In the models, I was able to explain more variance in privacy behavior when the indicator variables represented a continuous approximation using a 7-point Likert scale of true privacy behaviors (such as frequency of unfriending, deleting posts, untagging, etc.). Therefore, caution should be used when using privacy settings as artifacts to measure privacy behavior. As designers, this may signal that privacy settings

model SNS user's desired privacy poorly, and we should focus privacy redesign with mechanisms that are available just-in-time, when a privacy decision is being made. Instead of interpreting the results as people not rationally doing what they desired to do, a lack of significant relationship between desired privacy level and technology-supported privacy mechanism use signals opportunities for improved interactional design that better meets privacy needs.

Second, I relied on self-reports from SNS users and snowball sampling procedures. I offset the limitation of self-reports by having SNS users sign in to their Facebook accounts to report their privacy settings. I believe that this was an adequate means for increasing recall, but I also note that it did directly impact feature awareness of SNS users who participated in the survey. One participant, for instance, responded, "Dear Lord that was scary! Thanks for bringing some of those settings to my attention!" Another said, "It was a real eye-opener for me." And another said, "Thanks Pam for the tutorial as well as the Questionnaire. It was very informative and it took me well over an hour as I was totally unaware of all these settings; especially since the Facebook page has changed recently." Yet, I believe that this is a positive side effect of this research. Snowball sampling limits us by not providing a clear sampling frame in which to generalize the results. However, I chose this approach to gain access to a more diverse sample. In this case, I believe I met this goal as only 30% of the sample were students.

Finally, I specifically tested models that were theoretically derived in the previous, qualitative analysis and narrowed the scope to congruent desired privacy and technology-supported mechanisms. It would be useful to take a step back using more exploratory methods and test alternate hypotheses such as combining some of the ten

boundary types or identifying other types of privacy boundaries pertinent to SNSs. In addition, privacy behaviors are not always congruent with one's privacy goal. Future models need to take into account incongruent boundary mechanisms. Future research should also work on encompassing and measuring both technology-supported and coping privacy behaviors in order to get a true profile of SNS user privacy behaviors. Overall, I have contributed to unpacking some of the pertinent, complex relationships inside the black box of the "Privacy Paradox," but I know there is definitely more work that needs to be done. In the next study, I examine the relationship between privacy outcomes and social networking outcomes.

CHAPTER 7: RECONCILING PRIVACY WITH SOCIAL NETWORKING OUTCOMES

Referring back to the theoretical framework, this chapter focuses on the relationship between privacy outcomes and social networking outcomes. Privacy, often characterized as limiting public information disclosure (Tufekci 2008; Xu, Dinev et al. 2008), is often depicted in SNS research as antithetical to social networking's goal of connecting and sharing. Although privacy outcomes and social networking outcomes are often assumed to be negatively related to one another, I hypothesize that achieving one's desired level of privacy can be positively associated with social networking benefits such as self-esteem and social capital. While I am the first to theoretically relate privacy regulation outcomes to SNS outcomes in this way, the idea of relating privacy regulation outcomes to social environment outcomes is not novel. For instance, environmental psychology research has found a positive relationship between ease of boundary mechanism use and effectiveness with place attachment in student-family apartments (Harris, Brown et al. 1996). In a study examining adjustment to older adult living environments, a privacy outcome of social crowding was associated with lower levels of personal and overall adjustment, and individuals living in assisted living facilities were prone to feel more crowded than those living independently (Kaya, Webb et al. 2005).

However, very little SNS privacy research relates privacy outcomes to social networking benefits. Ellison et al. found that the use of advanced privacy settings was positively associated with social capital (2011), and Stutzman et al found a significant,

positive relationship between disclosure and social capital (Stutzman, Vitak et al. 2012). However, neither one of these studies examined the relationship between privacy outcomes, whether or not individuals achieve their desired privacy level, and these social networking benefits. Therefore, this study fills this gap by exploring privacy outcomes in relation to social networking outcomes. In this chapter, operationalization of these constructs and proposed hypotheses for the research model are discussed.

7.1 Research Model and Hypotheses

7.1.1 Privacy Outcomes

Consistent with Altman, I operationalize one's privacy outcome as the difference between one's desired privacy level and one's achieved privacy level (1975). In other words, the privacy level one "wants" versus what they "have." I adapted the discrepancy score approach which was used by Kaya and Weber in their examination of privacy regulation and crowding in American and Turkish student residence halls (Kaya and Weber 2003) and their research on privacy regulation in older adult living environments (Kaya, Webb et al. 2005). The scale I developed for desired privacy level was revised to reflect achieved privacy level; both were measured on 7-point Likert scales. As an example, a measure for desired privacy level is, "I want to keep my different social circles separate from each other on Facebook." The analogous item for achieved privacy level would be, "I keep my different social circles separate from each other on Facebook." Thus, the discrepancy scores could (1) fall into a range of negative values (-1 to -6), with desired privacy level less than what one has achieved (social isolation); (2) fall into a range of positive values (1 to 6), with desired privacy level higher than what one has achieved (social crowding); or (3) a zero value (0), indicating an optimal level of

achieved privacy. Kaya and Weber found a positive correlation between desired and achieved privacy level in their research, therefore I also hypothesize that:

> H1: Desired privacy level and achieved privacy level will be significantly and positively correlated.

7.1.2 Social Networking Outcomes

Both self-esteem and social capital (defined in detail in Chapter 5) have been studied as potential benefits of SNS use. The goal of this research is to better understand the relationship of these dependent variables to SNS privacy outcomes.

7.1.2.1 Self-Esteem

Self-esteem will be operationalized using Rosenberg's pre-validated scale for self-esteem (Rosenberg 1989). Consistently, interpersonal boundary literature confirms that boundary regulation is an integral part of personal well-being (Altman 1975; Katherine 1991; Whitfield 1993; Petronio 2002). Boundaries help us avoid stimulus overload, intrusions, and freedom from interference (Altman 1975). Therefore, I hypothesize that interpersonal boundary regulation outcomes directly impact self-esteem such that both states of crowding and isolation negatively impact one's self-esteem.

> H2: Higher levels of social crowding will be significantly and negatively associated with self-esteem.

> H3: Higher levels of social isolation will be significantly and negatively associated with self-esteem.

7.1.2.2 Social Capital

Social capital was operationalized using the three dimensions cited in past SNS research: bridging, bonding, and maintained (Williams 2006; Ellison, Steinfield et al. 2007; Ellison, Vitak et al. 2011). Yet, it is unclear through the literature the relationship between privacy outcomes and social capital, though many researchers have implied that

the two are diametrically opposed. SNS privacy is often characterized as the restriction from sharing private information. Yet, SNS research has established that self disclosure is necessary in order to build social capital (Stutzman, Vitak et al. 2012). Therefore, given this definition of privacy, upholding one's privacy implies a direct reduction in social capital. Because my research defines privacy as a boundary regulation process, where one is trying to achieve one's desired level of privacy, privacy outcomes vary between three conditions (optimal, social crowding, and social isolation) across each of the ten boundary types. Thus, I propose that more optimal privacy outcomes are positively associated with the three dimensions of social capital. I believe that individuals benefit the most when their privacy needs are met. Therefore,

> H4: Higher levels of social crowding will be significantly and negatively associated with social capital.
>
> H5: Higher levels of social isolation will be significantly and negatively associated with social capital.

7.2 Individual Differences

Individual differences will be captured as contextual factors in this study and used as control variables. Demographic information included gender, age, ethnicity, and education level. The Facebook Intensity Scale (Ellison, Steinfield et al. 2007) and the types of SNS activities (Koroleva, Krasnova et al. 2011) SNS users engaged in were also included as control variables. Personality was operationalized using the Big Five Personality measures (Gosling, Rentfrow et al. 2003). I also asked whether or not each participant was a UNC Charlotte student.

7.3 Methodology

I created a web-based survey instrument using Survey Share. Participant recruitment was done through snowball sampling (Babbie 2004) using a sampling frame

of university students and faculty. A random sample of 10,000 UNC Charlotte email addresses were selected and emailed an invite to participate in the survey. Participants had to be over 18 and have an active Facebook account. Participation was incentivized through the chance to win one of two $100 Amazon gift certificates through a random drawing of participants. Each participant who opted in to enter the drawing received one drawing entry. As an extra incentive to share the survey, participants received one additional entry for referring someone else who completed the survey. Each survey participant, however, was limited to a maximum of 25 drawing entries and was eligible to receive at most one $100 gift card. Both the survey questions and recruitment methodology described were approved by the university's Institutional Review Board (IRB).

The hypotheses were tested through Pearson's bivariate correlation analysis using SPSS, separately across each of the ten boundary types. I chose this approach because I am interested in the direction and significance of the relationship between each individual privacy outcome and the social networking outcomes. I am not proposing that privacy outcomes explain a large portion of the variance in social networking outcomes or any type of causation between the independent and dependent variables (Huck 2004). Consistent with Chapter 6, the ten boundary types are analyzed separately from one another because robust theory development regarding the relationship between the boundary types has not yet been established. Therefore, Pearson's correlation analysis represents the minimally sufficient analysis to address the research hypotheses and uphold parsimony (Kline 2011).

As stated above, a limitation of this approach is that Pearson correlation coefficients are zero-order correlations that do not control for inter-correlations between variables (Kline 2011). As such, this approach limits the ability to interpret the cumulative effects of the ten privacy outcomes for the different boundary types with respect to the dependent variables. Therefore, a post hoc analysis was done using multiple regression, CFA, and SEM in order to explore the inter-correlations between the ten different boundary types and their impact with respect to the dependent variables. Implications of the exploratory findings will be discussed in our post hoc analysis.

7.4 Results

7.4.1 Data Screening

Data were screened for missing data, outliers, and normality prior to data analysis. A total of 331 surveys were completed. Twelve responses were deleted due to excessive missing data. Three responses were deleted because participants indicated that they did not have active Facebook accounts, and one additional response was deleted as a multivariate outlier because the participant chose the first answer for questions over 45% of the time. Univariate outliers existed as is expected with a large dataset (Tabachnick and Fidell 2007) and therefore were not removed from the analysis. This left a final sample size of 315 participants.

7.4.2 Descriptive Statistics

The sample included 81 males, 233 females, and one unreported gender. The average age of participants was 30.76 years old with a standard deviation of 11.4 years, ranging from 18 to 66 years old. Sample distributions for ethnicity and education level are provided in TABLE 49 and TABLE 50.

TABLE 49: Ethnicity

Ethnicity	Frequency	Percent
-1 (Missing)	2	0.6%
White/Caucasian	247	78.4%
Black/African American	23	7.3%
Hispanic/Latino	11	3.5%
Asian/Pacific Islander	21	6.7%
American Indian/Alaskan Native	1	0.3%
Other	10	3.2%
Total	315	100.0%

TABLE 50: Education Level

Education Level	Frequency	Percent
Missing	2	0.6%
Less than high school	0	0%
High school diploma	11	3.5%
Some college	50	15.9%
2 year college degree	18	5.7%
4 year college degree	30	9.5%
Some graduate school	91	28.9%
Master's degree	82	26%
Doctoral degree	25	7.9%
Professional degree (MD, JD, etc.)	6	1.9%
Total	315	100.0%

In addition, 75% of the sample identified themselves as UNC Charlotte students. The majority (92.7%) of the sample reported having a Facebook account for over 2 years with 26.1% having an active Facebook account over six years. Based on the descriptive statistics of this sample, the data is skewed toward a predominantly female, white and well-educated adult, student population who is not new to Facebook. Therefore, generalizability of the results may be constrained by the sample statistics.

7.4.2.1 Privacy Outcomes

To calculate one's privacy outcome across each of the ten boundary types, I subtracted each item for achieved privacy level from the similar item for desired privacy level. Descriptive statistics for desired privacy level and achieved privacy level are included in Appendix C. Descriptive statistics for privacy outcomes are presented in TABLE 51.

TABLE 51: Descriptive Statistics Privacy Outcomes

Item	N-Valid	N-Missing	Mean	Std. Deviation	Skewness	Kurtosis
XIN1	308	7	1.23	1.71	0.62	0.10
XIN2	308	7	0.98	1.90	0.54	0.07
XIN3	306	9	1.20	1.89	0.17	-0.15
XOUT1	312	3	0.74	1.42	0.97	1.45
XOUT2	306	9	0.75	1.82	0.09	1.31
XOUT3	309	6	1.25	1.75	0.51	0.40
XSELF1	310	5	0.33	1.16	0.76	3.55
XSELF2	310	5	0.26	1.27	1.38	4.23
XSELF3	309	6	-0.18	1.30	-0.11	1.51
XCONF1	311	4	0.82	1.52	0.32	0.07
XCONF2	309	6	1.27	1.84	-0.16	0.18
XCONF3	305	10	1.15	1.60	0.25	0.41
XCONN1	308	7	0.31	1.54	0.22	1.19
XCONN2	305	10	1.05	1.72	0.19	0.15
XCONN3	308	7	0.60	1.81	-0.16	0.44
XCONT1	314	1	0.08	1.56	0.37	1.64
XCONT2	311	4	-0.26	1.63	0.30	0.40
XCONT3	312	3	0.45	1.72	0.15	-0.04
XINTER1	308	7	1.01	1.79	-0.06	-0.18
XINTER2	309	6	1.32	1.69	0.28	0.41
XINTER3	307	8	1.19	1.75	0.13	0.21
XDISC1	310	5	0.72	1.91	-0.16	0.28
XDISC2	307	8	0.91	1.79	0.15	0.31
XDISC3	310	5	0.94	1.88	0.00	0.75
XBLOCK1	309	6	0.66	2.15	-0.05	0.98
XBLOCK2	309	6	0.70	1.65	0.77	1.36
XBLOCK3	308	7	1.15	1.82	0.52	0.09
XDIS1	311	4	1.37	2.01	0.00	0.14
XDIS2	308	7	0.60	2.11	-0.04	0.27
XDIS3	313	2	0.60	1.72	0.17	0.10

A positive mean represents an average state of social crowding whereas a negative mean represents a state of social isolation. TABLE 51 shows that most items suggest a general state of social crowding on Facebook. Only two items produced negative means suggesting social isolation. “I want to share only minimal information

about myself on Facebook" (SELF3) and "I want my interactions on Facebook to be different between me and a close friend than they would be with an acquaintance," (CONT2) were the two items where individuals achieved too much privacy. For self disclosure, I actually observed the same sentiment from the interviewees where they wanted to share more but felt like they could not. This resulted in coping mechanisms of self-censorship which led some to feel a loss of authentic self within their SNS. For relationship context, social isolation in this instance may suggest that individuals want Facebook to facilitate closer relationships with acquaintances, but it is not meeting their needs for turning acquaintances into close friends.

Also noteworthy in the descriptive statistics presented in TABLE 51, is the frequent occurrence of positive kurtosis values over one. At closer look of the data, for each of the items below, histograms show that zero is the most frequent reported value for most privacy outcome items. This means that a large proportion of individuals feel that they have achieved their optimal privacy level on Facebook. I find this result interesting because all sixty items measuring desired and achieved privacy level were randomized and dispersed on different pages of the survey. Therefore, it would have taken a participant hours to intentionally match each of the items to report optimal privacy levels. In addition, they were not told that privacy outcome would be operationalized as a difference score. However, the descriptive statistics do support the first hypothesis that desired privacy level and achieved privacy level are highly correlated.

7.4.2.2 Social Networking Outcomes

Next, I will present the descriptive statistics for self esteem and social capital. For self esteem (TABLE 52), item reports were generally high, over five on a 7-point Likert. Many of the items were skewed left with large, positive kurtosis. Therefore, individuals generally reported consistently high levels of self esteem.

TABLE 52: Descriptive Statistics for Self Esteem

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SE1	315	6.17	.967	-1.527	.137	2.807	.274
SE2	310	6.32	.775	-1.169	.138	1.713	.276
SE3	314	6.15	1.119	-1.579	.138	2.209	.274
SE4	313	5.86	.985	-1.005	.138	1.156	.275
SE5	315	6.10	1.258	-1.633	.137	2.083	.274
SE6	314	5.68	1.119	-.911	.138	.634	.274
SE7	312	5.59	1.158	-.896	.138	.475	.275
SE8	313	4.97	1.721	-.475	.138	-1.023	.275
SE9	315	5.10	1.683	-.448	.137	-1.142	.274
SE10	311	5.68	1.624	-1.104	.138	.004	.276
Valid N (listwise)	297						

I measured multiple types of social capital which included bridging (BRIDGE), bonding (BOND), and maintained (MAINT). Descriptive statistics are presented in TABLE 53. Overall, most of the items were normally distributed. Those that were not tended to be skewed left with high, positive kurtosis. In this case, many of the items used to measure maintained social capital averaged fairly high and tended to favor higher levels of maintained social capital than lower ones.

TABLE 53: Descriptive Statistics for Social Capital

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BRIDGE1	314	4.75	1.557	-.665	.138	-.070	.274
BRIDGE2	313	4.51	1.573	-.559	.138	-.392	.275
BRIDGE3	313	4.87	1.478	-.690	.138	-.070	.275
BRIDGE4	312	4.50	1.483	-.574	.138	-.075	.275
BRIDGE5	314	3.89	1.648	-.104	.138	-.861	.274
BRIDGE6	313	3.43	1.580	.057	.138	-.892	.275
BRIDGE7	314	2.99	1.600	.520	.138	-.595	.274
BRIDGE8	314	4.61	1.599	-.678	.138	-.258	.274
BRIDGE9	314	4.32	1.709	-.400	.138	-.760	.274
BRIDGE10	313	4.27	1.693	-.429	.138	-.673	.275
BOND1	315	3.81	1.484	-.133	.137	-.671	.274
BOND2	315	3.60	1.508	.000	.137	-.744	.274
BOND3	314	5.40	1.572	-1.135	.138	.624	.274
BOND4	314	4.75	1.671	-.634	.138	-.400	.274
BOND5	315	4.99	1.359	-.693	.137	.364	.274
BOND6	314	5.46	1.456	-1.163	.138	1.172	.274
BOND7	314	4.40	1.475	-.259	.138	-.277	.274
BOND8	313	4.56	1.657	-.529	.138	-.497	.275
BOND9	314	4.89	1.500	-.443	.138	-.497	.274
BOND10	315	4.67	1.837	-.531	.137	-.752	.274
MAINT1	315	4.88	1.577	-.757	.137	-.068	.274
MAINT2	315	5.08	1.392	-.964	.137	.872	.274
MAINT3	314	5.46	1.183	-1.108	.138	1.701	.274
MAINT4	314	5.75	1.209	-1.301	.138	2.001	.274
MAINT5	315	5.32	1.392	-1.030	.137	.854	.274
Valid N (listwise)	270						

7.5 Construct Validity

Although I used pre-validated measures, I wanted to confirm that the constructs had robust internal consistency, convergent, and discriminant validity before doing the analysis. Therefore, I performed a CFA for the dependent variables which included self-esteem and the three dimensions of social capital. Items exhibiting multicollinearity,

discriminant validity, and internal consistency issues were removed (BRIDGE5, BRIDGE6, BOND1, BOND2, BOND8, SE2, SE7, and SE9). This resulted in adequate goodness-of-fit statistics of χ^2 (318) = 659.48, p=<0.0000, RMSEA=0.058 (with a CI from 0.052 to 0.065), p=0.015, CFI=0.93, TLI=0.92, and SRMR=0.055. I found significant correlations between dimensions of social capital for bonding and bridging (β=0.237, p <=0.000), maintained and bridging (β=0.553, p <=0.000), maintained and bonding (β=0.508, p <=0.000). Contrary to past research findings (Steinfield, Ellison et al. 2008), there were no significant correlations between self-esteem and any of the dimensions of social capital. Once construct validity was established, I calculated the mean of the remaining indicator items to represent the overall measure for each of the latent variables.

7.6 Hypothesis Testing

7.6.1 Desired and Achieved Privacy Level

For hypothesis one, I tested for significant correlations between desired and achieved privacy levels for each of the ten boundary types. The high, positive kurtosis in the variables for privacy outcome already suggested a strong relationship between reported desired and achieved privacy levels, but TABLE 54 confirms hypothesis one. Not only are all the correlations significant at the 0.01 level, the effect size is relatively large (β > 0.45) for nine out of ten of the boundary types. The only effect size below this threshold is the relationship between desired and achieved confidant disclosure boundaries. This suggests that individuals may feel that they lack control over how others share their private information with others more so than other boundary types.

TABLE 54: Pearson's Correlations between Desired and Achieved Privacy Levels

Boundary Type	Pearson's Correlation
Inward-Facing Territorial	0.458**
Outward-Facing Territorial	0.463**
Self-Disclosure	0.544**
Confidant-Disclosure	0.395**
Relationship Connection	0.575**
Relationship Context	0.470**
Network Intersection	0.499**
Network Discovery	0.501**
Interactional Blocking	0.538**
Interactional Disabling	0.475**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

7.6.2 Privacy Outcomes, Self-Esteem, and Social Capital

Finally, I tested the remaining hypotheses dealing with the relationship between privacy outcomes and social networking outcomes. As a reminder, I operationalized privacy outcomes as the difference between desired privacy level and actual privacy level. I analyzed social crowding and social isolation separately; therefore, TABLE 55 shows the Pearson's correlations for social crowding (privacy outcomes ranging from 0 to 6) for each of the ten boundary types. First, it is important to note the high number of participants who reported overall states ranging from optimal to socially crowded. Out of 315 total participants, I observed a range of 180-276 participants across the ten boundary types who reported average values in this category. Overall, there was only one significant correlation between social crowding and self-esteem. For interactional disabling boundaries, higher levels of social crowding were related to lower levels of self-esteem. In all cases where there was a significant relationship between social crowding and social capital (approximately 33% of the time), higher levels of social

crowding were associated with lower levels of social capital. Overall, the effect sizes observed were fairly low, the highest effect size observed was for the relationship between outward-facing territories and bonding social capital ($r = -0.3$). This means that the relationship, although significant, between privacy outcome and the dimensions of social capital is weak. Yet, in these cases, more optimal privacy outcomes were related to higher levels of social capital where individuals perceive higher levels of social capital when their privacy needs are met. Bridging social capital tended to be significantly correlated more frequently than bonding or maintained social capital. Social crowding within outward-facing territories was significantly and inversely related to all three types of social capital. When individuals do not achieve the privacy levels they desire through control of their Facebook Walls/Timeline, it is associated with lower levels of bonding social capital. Essentially, while these finding provide only moderate support of a positive relationship between optimal privacy outcomes and social networking benefits, they do disconfirm the assumption that privacy and social networking goals are mutually exclusive. If anything, privacy outcomes and social networking outcomes are generally unrelated.

TABLE 55: Pearson's Correlations for Social Crowding Privacy Outcomes

Boundary Type	N	Self-Esteem	Bridging	Bonding	Maintained
Inward-Facing Territorial	271	0.027	-0.171**	-0.098	-0.131*
Outward-Facing Territorial	268	0.017	-0.189**	-0.296**	-0.143*
Self-Disclosure	199	0.093	0.008	-0.061	-0.037
Confidant-Disclosure	274	0.006	-0.142*	-0.091	-0.065
Relationship Connection	242	0.024	-0.122	0.066	-0.005
Relationship Context	180	0.098	-0.219**	-0.178*	-0.132
Network Intersection	276	0.081	-0.100	-0.038	-0.057
Network Discovery	243	0.044	-0.123	-0.047	-0.072
Interactional Blocking	259	-0.024	-0.156*	-0.158*	-0.036
Interactional Disabling	237	-0.134*	-0.140*	-0.123	-0.067

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

TABLE 56 shows the Pearson's correlations for social isolation (privacy outcomes ranging from 0 to -6) for each of the ten boundary types. The correlation coefficients were multiplied by negative one to reverse the scale for a more intuitive presentation of the results for social isolation. First, the number of participants reporting social isolation (as opposed to social crowding) dramatically dropped, ranging from 68-186. This finding is consistent with the fact that SNSs such as Facebook promote sharing and connecting and often set one's default privacy settings to be open. Therefore, it makes sense that more individuals would experience social crowding within SNSs than social isolation.

I found no significant correlations between self-esteem and social isolation. For social crowding and social capital, I only found a few significant correlations (only 17% significance across the bivariate pairs). Surprisingly, most of the significant coefficients had the opposite sign than predicted. For most significant relationships, social isolation

was directly associated to social capital. Only one case out of five significant correlations (outward-facing territories and bonding social capital) showed a negative correlation between social isolation and social capital.

For self-disclosure boundaries, social isolation was significantly and positively correlated with all three dimensions of social capital. This finding is contrary to past research that found a significant, positive relationship between disclosure and social capital (Stutzman, Vitak et al. 2012). However, this paper measured disclosure differently, and did not operationalize privacy outcome as the difference between desired and achieved self-disclosure as in this model. In retrospect, this finding is not inconsistent with the SNS user interviews. Some individuals wanted to be able to disclose more within their SNSs than they felt they were able to, resulting in a sense of social isolation. However, the individuals who expressed social isolation through self-disclosure boundaries were also the ones who were highly engaged in their network and avid SNS users. Therefore, a confounding factor of SNS engagement may explain the counterintuitive relationship between self-disclosure privacy outcomes and social capital.

Overall, I believe that a few different factors may contribute to the surprisingly positive or lacking relationship between social isolation and social capital that I observed. First, privacy outcome tended to be skewed left with a high, positive kurtosis. In other words, individuals most often reported optimal to social crowding privacy outcomes instead of social isolation. Because of the overwhelming experience of social crowding, instances of social isolation (receiving more than one's desired level of social interaction), may have actually been a welcomed change. Another reasonable explanation is that individuals who experience social isolation – less social interaction than they

desire – value the social capital they do derive from their networks more than individuals who are experiencing social crowding.

TABLE 56: Pearson's Correlations for Social Isolation Privacy Outcomes (Sign Reversed)

Boundary Type	N	Self-Esteem	Bridging	Bonding	Maintained
Inward-Facing Territorial	93	0.027	0.224*	0.070	0.152
Outward-Facing Territorial	95	0.008	-0.199	-0.210*	-0.068
Self-Disclosure	180	0.122	0.251**	0.154*	0.285**
Confidant-Disclosure	68	0.035	0.070	0.218	0.061
Relationship Connection	104	0.026	0.025	0.164	0.054
Relationship Context	186	0.063	0.033	0.090	0.041
Network Intersection	76	0.137	-0.057	0.031	-0.025
Network Discovery	106	-0.015	0.153	0.125	-0.021
Interactional Blocking	103	0.013	0.189	0.128	0.195*
Interactional Disabling	112	0.129	0.012	0.145	0.141

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

7.7 Limitations

As noted previously, this analysis did not control for inter-correlations between the ten boundary types for privacy outcomes; I want to discuss some additional limitations of this study as well. First, the data set had an unexpectedly low range of values for privacy outcome when calculated as a difference score. Due to the high positive kurtosis, the means of the privacy outcome variables converged around zero. Privacy outcome means were all less than the absolute value of 1.5 on a scale of -6 to 6 with relatively small standard deviations (highest at 2.11). Therefore, low variability in the data set may contribute to the small effect sizes observed. Because the participants only represented active Facebook users, individuals who have abandoned Facebook due

to extreme social crowding or isolation were excluded from this study. I believe that a larger observed range in privacy outcomes across the ten boundary types may increase the effect size. Second, operationalizing privacy outcome as a difference score adds additional error to the measures, most likely suppressing the bivariate correlations. Third, the non-normality present in the data set may have also reduced the significance and effect size of the results. For instance, the lower number of instances of social isolation reduced the overall sample size for calculating the bivariate correlations for this condition. Because of these limitations, I performed additional post hoc analysis in order to gain more insight on the relationships between the various constructs in this model.

7.8 Post Hoc Analysis

7.8.1 Pearson's Correlation Analysis

In order to tease out the effects of desired privacy level and achieved privacy level on the relationship between privacy outcome (operationalized as a difference score between the two) and social networking outcomes, I calculated additional Pearson's correlations for these constructs. First, I calculated the Pearson's correlation between desired privacy level and social networking outcomes. As shown in TABLE 57, I did not find a significant relationship between self-esteem and any of the ten boundary types. In cases where desired privacy level was significantly related to social capital (30% of the time), it was an inverse relationship with a relatively low effect size. In other words, higher levels of desired privacy are weakly but significantly related to lower levels of social capital.

TABLE 57: Pearson's Correlations between Desired Privacy Levels and Social Networking Outcomes

Boundary Type	Self-Esteem	Bridging	Bonding	Maintained
Inward-Facing Territorial	0.101	-0.043	0.043	0.068
Outward-Facing Territorial	0.014	0.059	-0.009	0.049
Self-Disclosure	0.055	-0.250**	-0.110	-0.078
Confidant-Disclosure	0.001	-0.111*	-0.077	-0.077
Relationship Connection	0.049	-0.229**	-0.025	-0.251**
Relationship Context	-0.019	0.006	-0.010	0.001
Network Intersection	-0.049	-0.016	-.141*	-0.155**
Network Discovery	-0.038	-0.155**	-0.109	-0.172**
Interactional Blocking	0.027	-0.112*	0.030	-0.014
Interactional Disabling	-0.070	-0.090	-0.090	-0.026

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

In this way, it appears that privacy and social capital are at odds. A reasonable interpretation of this finding, however, is that individuals who inherently value privacy tend to do so at the expense of gaining social value from SNSs. However, one's desired privacy level is an individual characteristic that is not readily changed merely through interface design. Thus, SNSs forcing individuals to share more or interact more than they want still may not improve one's social capital.

Next, I examined the relationship between achieved privacy level and social networking outcomes. Again, I did not find any significant relationship between achieved privacy levels and self-esteem across any of the ten boundary types (TABLE 58). However, half of the bivariate correlations between achieved privacy level and the dimensions of social capital were significant, representing the most significance thus far between any of the privacy variables and social networking outcomes. Therefore, achieved privacy level, regardless of one's desired privacy level, seems to have the most

significant relationship (though with small effect size) with one's level of social capital across the ten boundary types. For twelve out of fifteen pairs of significant bivariate correlations, the significant coefficients had a positive sign, suggesting a positive relationship between one's achieved privacy level and social capital. A significant impact of this finding is that it supports the need to design SNS interfaces with ample mechanisms to allow boundary regulation, as opposed to designing SNS interfaces biased toward openness and sharing.

TABLE 58: Pearson's Correlations between Achieved Privacy Levels and Social Networking Outcomes

Boundary Type	Self-Esteem	Bridging	Bonding	Maintained
Inward-Facing Territorial	0.040	0.164**	0.148**	0.209**
Outward-Facing Territorial	0.032	0.157**	0.187**	0.137*
Self-Disclosure	0.077	-0.081	0.013	0.114*
Confidant-Disclosure	0.008	0.081	0.131*	0.054
Relationship Connection	0.064	-0.127*	0.017	-0.218**
Relationship Context	0.010	0.125*	0.165**	0.135*
Network Intersection	-0.065	0.058	-0.106	-0.149**
Network Discovery	-0.013	-0.002	0.005	-0.087
Interactional Blocking	0.051	0.048	0.154**	0.055
Interactional Disabling	0.026	0.056	0.104	0.106

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Overall, the relationship between the different aspects of privacy and social networking outcomes is complex. The descriptive statistics suggested that individuals tend to desire a high level of privacy, but desired privacy level can be negatively associated with social capital. There is a significant and strong overall correlation between desired and actual privacy levels, but privacy outcomes tend to be skewed

toward social crowding over social isolation. Thus, it is interesting to see a sign change in the correlation coefficients which suggests that achieving a high level of privacy actually correlates with higher social capital. It is plausible that high levels of desired privacy and an over abundance of social crowding helps explain why social capital is enhanced when achieved privacy levels are high. However, there are a few cases where achieved privacy level is significantly and negatively correlated with various types of social capital. For instance, high levels of achieved relationship connection privacy are negatively associated with bridging and maintained social capital. This may suggest that relationship connection boundaries play a different role than other boundary types. Because relationship connection boundaries help individuals decide whom to let in and whom to keep out of their SNSs, they may have a stronger overall impact on social capital derived from participating within SNSs.

To account for the inter-correlations between the ten boundary types, I performed additional post hoc analysis in order to better understand the impact of relationship between the different privacy outcomes across the boundary types with respect to the dependent variables. First, TABLE 59 shows the bivariate correlations between the privacy outcomes across the ten different boundary types. There is a significant, positive association between the majority of the privacy outcomes for each of the boundary types. This is consistent with my theory development which suggests overlap between the boundary types. However, these results may be slightly exaggerated due to the operationalization of privacy outcome as a difference score which presented with a high, positive kurtosis and an overall restricted range of values. This result is useful, however, as it provides evidence that there are no multicollinearity issues confounding the previous

analysis, as none of the bivariate correlations are greater than 0.9 (Huck 2004; Kline 2011).

TABLE 59: Pearson's Correlations between Privacy Outcomes for Ten Boundary Types

	XIN	XOUT	XSELF	XCONF	XCONN	XCONT	XINTER	XDISC	XBLOCK	XDIS
XIN	1									
XOUT	.440**	1								
XSELF	.209**	.290**	1							
XCONF	.287**	.317**	.341**	1						
XCONN	.211**	.254**	.181**	.255**	1					
XCONT	.284**	.318**	.289**	.274**	.260**	1				
XINTER	.236**	.282**	.143*	.331**	.442**	.328**	1			
XDISC	.250**	.341**	.132*	.366**	.317**	.206**	.447**	1		
XBLOCK	.396**	.474**	.335**	.373**	.328**	.248**	.308**	.321**	1	
XDIS	.330**	.323**	0.105	.312**	.207**	.241**	.364**	.345**	.313**	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

7.8.2 Regression Analysis

To address the limitation that inter-correlations between boundary types were not controlled for, I performed a regression analysis using privacy outcome for each of the ten boundary types as independent variables to assess the explanatory value of all the privacy outcomes in relation to one another on the dependent variables. Because the hypothesis testing negated the hypothesized curvilinear relationship between privacy outcome and social networking outcomes (where optimum was represented by zero on a

scale from -6 to 6), I was able to perform a standard linear regression instead of creating squared terms to model a curvilinear relationship for this post hoc analysis.

Consistent with our previous analysis for the relationship between privacy outcomes and self-esteem, none of the privacy outcomes were significant predictors of self-esteem, and actually produced a negative adjusted R-squared. Next, using bridging social capital as the dependent variable, we found that the ten privacy outcomes explained very little of the overall variance in bridging social capital (R-square = 0.078, Adjusted R-square = 0.05). However, this was expected. In addition, only one privacy outcome (XIN for inward-facing territorial boundaries) had a significant coefficient in this model. The beta coefficient (-0.181) was negative with a small effect size. This, again, supports the idea that, within the spectrum of social isolation to social crowding, social crowding is negatively associated with bridging social capital for inward-facing territories.

TABLE 60: Regression Analysis for Bridging Social Capital

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.480	.115		38.873	.000
XIN	-.159	.058	-.181	-2.755	.006
XOUT	.055	.071	.053	.770	.442
XSELF	-.101	.085	-.074	-1.191	.234
XCONF	-.070	.069	-.066	-1.007	.315
XCONN	-.007	.066	-.006	-.100	.920
XCONT	-.025	.071	-.022	-.356	.722
XINTER	.040	.065	.043	.622	.534
XDISC	-.086	.057	-.100	-1.509	.132
XBLOCK	-.028	.062	-.032	-.453	.651

a Dependent Variable: BRIDGE

The multicollinearity statistics of this model were assessed in attempt to understand the non-significant coefficients of the other privacy outcomes in this model. Both the Condition Indices and VIF scores were low, suggesting that multicollinearity was not the problem. Upon further analysis, I found that when I removed the significant independent variable from the model, the next variable became significant, and subsequently with the same result. After several iterations, I found that this was the case for this model and the models using bonding and maintained social capital as the dependent variable. (Therefore, these results are not included in this write up.) An explanation for this anomaly is that the significance of the independent variables in the regression model is, to some extent, attributable to chance, where the independent variable with the highest bivariate correlation achieves significance over the other variables because they share common variance explaining the dependent variable. This, however, is only meaningful in predictive models which are trying to optimize predictive power of the overall model through a parsimonious subset of independent variables. It does not necessarily mean that there is no significant relationship between the various privacy outcomes and dependent variables. For models that are trying to understand the relationship between the independent variables and the dependent variables, it is important to also report the bivariate correlations (Tabachnick and Fidell 2007; Kline 2011), which were included in our original analysis. However, the regression analysis does confirm my assumption that privacy outcome has an overall low explanatory value when trying to understand the dimensions of social capital.

A limitation of the post hoc regression analysis was that privacy outcomes across the ten boundary types were treated as independent variables. In actuality, these

boundary types may be more accurately described as dimensions of a higher second order construct of overall privacy outcome. Therefore, it would be inappropriate in this case to treat them as independent variables in the regression model. A more appropriate approach would be to perform a CFA and SEM, taking into account the multidimensionality of the second order constructs and allowing all variables to be added to one cohesive model. Development of a full confirmatory, second order construct of privacy based on the ten boundary types was outside the scope of this research, but I conducted an initial, exploratory CFA and SEM analysis, as follows, in order to explore the relationships between the constructs more fully.

7.8.3 CFA and SEM

Prior to running a full SEM analysis, I performed CFAs separately for all constructs in the model (Self-Esteem, Social Capital, and Privacy Outcome) to verify construct validity. The MLM estimator was used in MPlus due to the non-normal data distribution. For self-esteem, SE2, SE7, and SE9 were removed due to redundancy in their measurement. The goodness-of-fit statistics for the CFA for self-esteem were: χ^2 (14) = 32.83, p=<0.003, RMSEA=0.066 (with a CI from 0.037 to 0.096), p=0.162, CFI=0.97, TLI=0.96, and SRMR=0.036. For social capital, I modeled it first as a second order construct with three dimensions (bridging, bonding, and maintained). However, this model presented with problems. Maintained social capital was too highly correlated with the higher order construct of social capital. When maintained social capital was removed, the second order model for bridging and bonding social capital did not converge. Therefore, the best model fit was to model bridging, bonding, and maintained social capital as separate latent variables. In addition, items BRIDGE5, BRIDGE6,

BRIDGE8, BRIDGE10, BOND1, BOND2, BOND8, BOND5, BOND6, MAINT2, and MAINT3 had to be removed from the model due to redundancy, internal consistency, and cross loading problems. The goodness-of-fit statistics for the CFA for social capital were: χ^2 (62) = 100.89, p=<0.0013, RMSEA=0.045 (with a CI from 0.028 to 0.061), p=0.675, CFI=0.97, TLI=0.97, and SRMR=0.041. The estimated correlation matrix for the latent variables is presented in TABLE 61.

TABLE 61: Social Capital Correlation Matrix

	BRIDGE	BOND	MAINT
BRIDGE	1		
BOND	0.169	1	
MAINT	0.557	0.413	1

For privacy outcome, however, modeling privacy outcome as a second order construct with ten dimensions of privacy based on the ten boundary types did produce an adequate model. After removing items XIN1, XCONF1, XINTER2, and XDISC2 due to redundancy and cross loadings and allowing some items across boundary types to covary when theoretically sound to do so, the goodness-of-fit statistics for the CFA for privacy outcome were χ^2 (284) = 330.80, p=<0.0292, RMSEA=0.025 (with a CI from 0.009 to 0.037), p=1.0, CFI=0.951, TLI=0.944, and SRMR=0.057.

Next, I performed a SEM regressing privacy outcome on both self-esteem and social capital. The goodness-of-fit statistics for the SEM were χ^2 (964) = 1184.3, p=<0.0000, RMSEA=0.031 (with a CI from 0.024 to 0.036), p=1.0, CFI=0.93, TLI=0.92, and SRMR=0.061. Similar to our previous results, there was not a significant path from privacy outcome to self-esteem (β = -0.009, p = 0.91). There was a significant path,

however, from privacy outcome to bridging (β = -0.24, p = 0.002) and bonding (β = -0.19, p = 0.014) social capital. For maintained social capital, the path was significant at the p <= 0.10 value (β = -0.13, p = 0.084). Overall, privacy outcome explained little of the variance in the dependent variables (self-esteem R^2 = 0.00, p = 0.95; bridging R^2 = 0.058, p = 0.128; bonding R^2 = 0.035 p = 0.218; and maintained R^2 = 0.016 p = 0.387). The estimated correlation matrix is shown in TABLE 62. These results allows us to interpret both the overall relationship of privacy outcomes to social networking outcomes as well as the individual relationships for each of the ten boundary types. For instance, the correlation coefficients between self-esteem and the ten privacy outcomes are all slightly negative though not significant. While this finding is not enough to accept the original hypothesis, the direction of this correlation is consistent with my prediction. Also, the correlation coefficients for the three types of social capital with the ten individual types of privacy outcomes are also all negative values with low effect sizes. Again, this is consistent with the hypothesized relationship.

TABLE 62: Correlation Matrix for Privacy Outcomes and Social Networking Outcomes

	IN	OUT	SELF	CONF	CONN
IN	1				
OUT	0.631	1			
SELF	0.437	0.593	1		
CONF	0.442	0.6	0.415	1	
CONN	0.415	0.563	0.389	0.394	1
CONT	0.46	0.624	0.432	0.437	0.41
INTER	0.284	0.385	0.266	0.27	0.499
DISC	0.278	0.378	0.262	0.265	0.248
BLOCK	0.599	0.813	0.562	0.569	0.534
DIS	0.392	0.533	0.368	0.373	0.35
SE	-0.006	-0.008	-0.006	-0.006	-0.005
BRIDGE	-0.165	-0.224	-0.155	-0.157	-0.147
BOND	-0.127	-0.173	-0.12	-0.121	-0.114
MAINT	-0.087	-0.119	-0.082	-0.083	-0.078
PRIVOUT	0.682	0.926	0.64	0.648	0.608

	CONT	INTER	DISC	BLOCK	DIS
CONT	1				
INTER	0.726	1			
DISC	0.275	0.483	1		
BLOCK	0.592	0.365	0.359	1	
DIS	0.388	0.239	0.235	0.505	1
SE	-0.006	-0.004	-0.004	-0.008	-0.005
BRIDGE	-0.163	-0.101	-0.099	-0.212	-0.139
BOND	-0.126	-0.078	-0.076	-0.164	-0.108
MAINT	-0.086	-0.053	-0.052	-0.112	-0.074
PRIVOUT	0.674	0.416	0.408	0.878	0.575

	SE	BRIDGE	BOND	MAINT	PRIVOUT
SE	1				
BRIDGE	-0.02	1			
BOND	-0.052	0.227	1		
MAINT	0.124	0.569	0.398	1	
PRIVOUT	-0.009	-0.242	-0.187	-0.128	1

One main contribution of this model is that it suggests a synergistic or cumulative effect of privacy outcomes on the dependent variables. For instance, the effect size for overall privacy outcome with bridging social capital is larger than the effect size of each of the individual privacy outcomes. It is also interesting to note that this model found no significant correlation between self-esteem and any of the three types of social capital. Limitations of this model include that it is an exploratory model where fitting was necessary to achieve adequate construct validity. Also, I did not test any moderating effects to determine interactions between any of the latent variables.

7.9 Discussion and Summary

TABLE 63 presents a summary of the results for this study.

TABLE 63: Hypothesis Testing Outcomes

Hypothesis	Outcome
H1: $r_{\text{desired/achieved}} <> 0$	ACCEPT
H2: $r_{\text{crowding/self-esteem}} <> 0$ (Inverse)	REJECT
H3: $r_{\text{isolation/self-esteem}} <> 0$ (Inverse)	REJECT
H4: $r_{\text{crowding/social capital}} <> 0$ (Inverse)	ACCEPT
H5: $r_{\text{isolation/self-esteem}} <> 0$ (Inverse)	REJECT

For hypothesis one, there is a significant and strong positive relationship between desired privacy levels and achieved privacy levels. For the most part, individuals felt that their privacy needs have been met. However, I also saw a larger distribution of participants who reported levels of social crowding more so than social isolation when interacting with others on Facebook. I did not find a significant relationship between self esteem and either state of social crowding or isolation (H2 and H3) except for one condition of social crowding. Therefore, I rejected hypotheses two and three. This may

possibly be because the negatively skewed distribution of self esteem where participants tended to report generally high levels of self esteem. I found partial support for hypothesis four during the original analysis. This relationship was significant for six of the ten boundary types in relation to bridging social capital and less often with bonding and maintained social capital. However, I found full support of this hypotheses during the post hoc SEM when modeling privacy outcome as a second order construct with ten dimensions of privacy boundary types. Social crowding was significantly and negatively associated with all three types of social capital. For hypothesis five, I observed one instance where social isolation and social capital were related in the direction that I predicted, but all the other significant correlations were in the direction contrary to my prediction. Thus, I rejected hypothesis five.

There are a number of important implications from these findings. First, the relationship between positive privacy outcomes and social networking outcomes is rarely a negative one, whereas the common assumption is for a negative relationship. Social crowding, a negative privacy outcome, is negatively associated (or unassociated) with social capital across the ten boundary types. In addition, finding significant and positive associations between social isolation and social capital empirically suggests a possible backlash against SNS interfaces which are designed with a bias toward sharing and openness. Because of the high levels of social crowding, individuals may be valuing brief instances of social isolation. Another interesting finding was that the relationship sign and significance changed across the different types of privacy boundary types for the different social networking outcomes. Furthermore, desired privacy, achieved privacy, and privacy outcome all had different relationships with social capital. Therefore, SNS

researchers need to be mindful of how they operationalize privacy and its related outcomes when trying to relate it to one's social networking outcomes.

Overall, this study provides evidence that optimal privacy outcomes do not reduce social networking benefits. For self-esteem, privacy outcomes had little relationship at all. For social capital, more optimal privacy outcomes (and even some social isolation) tended to be positively associated with various dimensions of social capital. Social crowding, receiving more social interaction than one desires, was negatively correlated with dimensions of social capital. However, the overall relationship between privacy outcomes and social networking outcomes was often non-significant or weak. Even so, this disconfirms the assumption that privacy and social networking goals are in conflict, and is the first step in reconciling the rift perceived between privacy and social networking goals. My future research will continue along this path - to examine interpersonal boundary regulation within online social networks as a means to align interactional privacy needs with social networking goals.

CHAPTER 8: DESIGNING FOR INTERACTIONAL PRIVACY

This chapter will summarize key findings within this research, highlight main contributions, and present implications for design of SNS privacy.

8.1 Research Summary and Contributions

The following research questions were proposed at the onset of this dissertation:

1. What are different types of interpersonal privacy boundaries SNS users manage, and what strategies do they use to do so?
2. What are salient factors involved in the SNS interpersonal boundary regulation process?
3. What factors impact SNS users' interpersonal boundary negotiation behaviors?
4. What is the relationship between desirable privacy outcomes and social networking benefits for SNS users?

The first research question was addressed in Chapters 3 and 4. In Chapter 3, I created a taxonomy of ten unique types of privacy boundaries and discussed technology-supported boundary mechanisms available to maintain these boundaries. I did this through an in-depth analysis of five different SNS interfaces as well as through semi-structured interviews of 21 SNS users. Key findings from Chapter 3 include:

- SNS privacy encompasses multiple boundary types – not just the boundary between public and private disclosures.
- SNS privacy boundaries include relationship connection, relationship context, network discovery, network intersection, inward-facing territorial, outward-facing territorial, self disclosure, confidant disclosure, interactional disabling, and interactional blocking.

- SNS interface controls (both settings and features) act as technology-supported boundary mechanisms to manage each of these boundary types. However, there are gaps where various boundary types are poorly supported.

- SNS users have different strategies for using SNS interface controls for boundary regulation. However, issues such as ease of use and lack of feature awareness of interface controls reduced the effectiveness of overall boundary regulation.

- As a result, SNS users continued to experience privacy violations and interpersonal boundary conflicts within SNSs, motivating the need for improved interface design.

A major implication of this study is the broadened scope of SNS privacy by framing it as a boundary regulation process. My boundary taxonomy helps define multiple types of privacy boundaries that have not characteristically been viewed as SNS "privacy settings." However, these technology-supported mechanisms, such as friending and unfriending, clearly help SNS users manage their social interactions with others. This new perspective can aid both designers and SNS users. Designers can leverage similar feature-oriented domain analyses as a way to benchmark how responsive their SNS interfaces are to privacy needs compared to other SNSs. By doing this, they can fill in gaps and possibly gain a competitive advantage. For instance, Google+ gained popularity because of its improved implementation of social circles to manage relationship context and network intersection boundaries (Kairam, Brzozowski et al. 2012). SNS users, once made aware of different privacy boundaries they have to manage, can improve their strategies for boundary management in ways that are more effective in meeting their needs. As it is, SNS users are frustrated by SNS privacy settings and struggling to maintain their interpersonal boundaries. Improved technology-supported mechanisms for boundary regulation can help reduce the need for maladaptive coping strategies.

Chapter 4 focused on coping strategies used outside of the SNS interface controls that SNS users also employed. Key findings from Chapter 4 include:

- SNS users employ coping mechanisms, behaviors developed outside of the SNS interface or through the unintended use of interface features, in an attempt to effectively maintain or regain their interpersonal boundaries.

- Existing social psychology theories can be leveraged to frame the specific SNS coping behaviors I observed. The framework of coping strategies include filtering, ignoring, blocking, withdrawal, aggression, compliance, and compromise.

- Although coping strategies for interpersonal boundary regulation were consistent with social theory, the actual behaviors exhibited within SNSs were drastically different than what one would expect in the physical world.

- Most coping strategies are maladaptive, reducing short term stress at the expense of increasing long term stress. Compromise, identified as a healthy coping strategy, had to be done outside of the SNS interface as few interface controls are designed explicitly for boundary negotiation with others.

- From a design perspective, analysis of coping behaviors can help pinpoint areas for improved interface design for interactional privacy.

In this chapter, we begin to see just how relevant social theory is to SNS interface design. SNSs are not just websites, they are social environments that induce social behaviors. Applying this coping framework to specific SNS user behaviors can aid HCI researchers and interface designers to better understand unintended usage of interface controls as well as behaviors taken outside of SNS interfaces. Designers can use coping behaviors as a way to identify poorly designed or non-existent interface features that, when implemented, could enhance end user experience. For example, designers could attempt to capture withdrawal coping behaviors such as deactivating one's account through the use of simple exit surveys. If a privacy breach led to withdrawal, the SNS could present technology-supported solutions for preventing a similar breach in the future. For instance, when Dollie deactivated her Facebook account due to a breach in confident-disclosure boundaries, the exit survey may persuade her to instead moderate Facebook Wall posts (though currently not an option in Facebook). From a wider perspective, the manifestation of these SNS coping strategies shows how SNS social

interactions can permeate from the virtual to the real world. For instance, Allen changed his social behaviors with his friends at social gatherings because of the potential negative consequences on Facebook. Therefore, SNSs are not just changing how we interact online, they are changing our entire social fabric. In this way, improved SNS design has the potential to improve not only online interactions, but also interactions we have offline.

Chapter 5 presented a theoretical model of interpersonal boundary regulation based on relevant literature and qualitative, empirical analysis. Key findings from Chapter 5 include:

- SNS privacy can be framed as a boundary regulation process, one where individuals attempt to achieve their desired level of privacy – not merely withdrawal from social interactions.
- Individual differences, awareness, desired privacy level, boundary negotiation, and privacy outcome are salient components of the process of interpersonal boundary process within SNSs.
    - Individual differences include personality, emotional state, culture, gender, and age.
    - Awareness includes self-awareness, risk awareness, and feature awareness.
    - Desired privacy level is unique across the ten boundary types identified in Chapter 3.
    - Boundary negotiation is done through the use of technology-supported and coping mechanisms.
    - Privacy outcomes include achieving one's desired privacy level (optimal), social crowding (more social interaction than desired), and social isolation (less social interaction than desired).
- Privacy outcomes can be related to social networking outcomes such as social capital and self-esteem. (However, in Chapter 7, I found no support for self-esteem.)

- Overall, this entire process is iterative in nature, where privacy outcomes can affect other aspects of the boundary regulation process.

Chapters 6 and 7 examined some of the key relationships hypothesized in this theoretical model, but there are many more empirical studies that can be explored in the future. For instance, what is the relationship between privacy behaviors and privacy outcomes? How does gender affect one's desired privacy level? What is the relationship between the use of technology-supported and coping mechanism for interpersonal boundary regulation? This theoretical model serves as a foundation for understanding and designing for interactional privacy needs within SNSs. Future studies should amend and improve this model as we develop a better understanding of the underlying social processes and actual behaviors that are unique to SNS environments. This model is also the first model to suggest a positive relationship between optimal privacy outcomes and social networking benefits.

In Chapter 6, I performed a quantitative analysis using SEM on web-based survey data from 308 SNS users to better understand what factors helped explain SNS users' privacy behaviors, addressing the third research question. Key findings from Chapter 6 include:

- Feature awareness is the most salient factor that impacts technology-supported SNS privacy behaviors across all ten boundary types. Therefore, feature awareness needs to be emphasized when discussing design implications.
- Risk awareness contributes to one's desired privacy level.
- The relationship between desired privacy level and SNS privacy behaviors varies across each of the ten boundary types. In some cases, there is a positive and significant relationship. In others, the relationship is dependent on varying levels of self-awareness, risk awareness, feature awareness, and burden. Yet, in others, there is no clear relationship at all. In these cases, it is important to assess whether or not SNS interface design is meeting SNS user privacy needs.

- Privacy settings are not the optimal strategy to model SNS privacy behaviors in a way that meets SNS users' privacy needs. More attention should be paid to privacy features that allow SNS users to make privacy decisions within the context of an interaction.

This study validated that feature awareness and risk awareness play an important role in the interpersonal boundary regulation process. Surprisingly, self-esteem had very little impact. By testing separate models for each of the ten boundary types, I was able to tease out, at a more micro-level, the relationship between desired privacy levels and privacy behaviors. Overall, I found strong support for a direct or moderated relationship between end user stated privacy desires and privacy behaviors, which adds skepticism to the "Privacy Paradox." For the most part, SNS users do behave consistently with their desires, but this can be impeded by other factors, such as a lack of feature awareness or ease of use. By understanding the factors that are most salient in facilitating the ability for SNS users to successfully negotiate their privacy needs, educators can focus on specific areas. For instance, feature awareness and risk awareness can be enhanced through end user training. I recently taught a Facebook class, for example, to a group of individuals 65 years and older. This particular age group is very concerned with protecting themselves from identity theft and other privacy breaches. One of the key points I emphasized was the use of relationship connection boundaries on Facebook in order to protect one's privacy. I told them to make sure to only friend people that they knew and trusted. Many of the class participants told me that they had often accepted friend requests from people because they felt that they had to. After taking the class, many of the participants said that their perspective had changed about friending and unfriending. Some even said they were going to go home and unfriend a few people.

If burden is the problem, designers may find ways to create simpler, context appropriate privacy features for specific types of boundary regulation. For example, Facebook currently has built in functionality to give feedback on the relevance and usefulness of particular advertisements. A similar approach could be leveraged to ask users whether or not they feel privacy features, such as friend lists, meet their overall needs. Google did well in implementing this feedback mechanism when they first launched Google+. Beta users were able to provide feedback on various parts of the interface. When privacy desires and behaviors are negatively or not correlated, this may suggest that existing interface controls simply do not accomplish the privacy goal SNS users are trying to achieve. I observed this most readily in the case of relationship context and network intersection boundaries, which are only supported through the creation and use of friend lists or circles. Practically, this feature falls short of the goal of individualizing social interactions interpersonally or managing social interactions between one's friends or groups of friends. Therefore, this represents an opportunity for a more congruent goal-mechanism SNS design.

Finally, in Chapter 7, I performed a correlation analysis between privacy outcomes and social networking outcomes from a web-based survey of 315 SNS users to address the fourth research question. Key findings from Chapter 7 include:

- There is a strong relationship between desired and achieved privacy level across all ten boundary types. SNS users most often report that they have achieved their desired privacy level. In cases where optimal privacy was not reported, SNS users heavily reported a privacy outcome of social crowding more frequently than social isolation.

- Higher levels of desired privacy were often significantly associated with lower levels of social capital while high levels of achieved privacy were positively associated with social capital.

- High levels of social crowding were often significantly associated with lower levels of social capital while higher levels of social isolation were positively associated with social capital.
- Overall, these findings suggest that privacy does not reduce the benefits SNS users can reap from social networking. In fact, in some cases, more optimal privacy outcomes can actually enhance social networking outcomes.

Through this study, we can see that Zuckerberg's design ideology of sharing and openness has successfully been reflected in the design of Facebook. SNS users tend to report privacy outcomes of social crowding more frequently than they do social isolation. However, our social norms have not changed. SNS users tend to report high levels of desired privacy, suggesting that unbounded sharing is not their goal. Most research suggests that there has to be a tradeoff between privacy and connecting with others. In one sense, this is true. Higher levels of inherent desired privacy tend to be negatively related to social networking benefits. Yet, I found a positive association between meeting one's desired privacy level and social capital. So, while privacy outcomes do little to predict one's overall social capital from social networking, they definitely are not impeding it. The biggest implication of this is for SNS researchers. We no longer have to rally in two camps – one touting the importance of privacy, and the other extolling the benefits derived through social networking. By reconciling this rift, we can now work together to design responsive SNS environments that meet one's privacy needs and enhance social interactions.

8.2 Design Guidelines

Before concluding, I would like to provide one more significant contribution to the field of SNS privacy – a set of design guidelines for SNS interactional privacy based on the findings of this research. First, SNS design should reflect real world social processes that have been grounded in social psychology, such as the process of

interpersonal boundary regulation. Even though SNSs are virtual spaces that create new opportunities and challenges, they are still social environments in which basic human interactions occur. Imposing new social norms, such as "frictionless sharing" (Eler 2011), deforms natural social interactions, causing boundary conflict and necessitating maladaptive coping behaviors. "The goal of environmental design is to create reinforcing environments that are linked to the behavior of their users" (Altman 1975). Building SNS environments that intuitively support human behavior will allow SNS users to leverage their existing interpersonal communication skills when managing their online social interactions, reducing a sense of duplicity between offline and online interactions. For example, environments that encourage negotiation can help reinforce boundary development and communication skills. It may also help younger generations develop these vital interpersonal skills, which some suggest have been degraded due to overuse of social media.

Second, SNS privacy needs to be reconceptualized as a boundary regulation process for optimizing social interactions, not solely as limiting private information disclosures. Simplifying SNS interactions to information disclosure reduces the complexity and richness of human social interactions. Sharing and protecting self with others is so much more than the exchange of information. It includes emotions, opinions, preferences, vulnerabilities, conflict, and change. SNS users have multiple types of interpersonal boundaries that need to be managed when they engage socially with others. Therefore, the entire spectrum of social interactions needs to be reflected in how designers conceptualize and how SNS users implement privacy. Altman provided a list of questions relevant to environmental designers for enhancing social interactions through

boundary regulation within physical spaces (1975). Surprisingly, even though his work was done 37 years ago, these same questions can still be applied to interactional design for SNSs. Therefore, I will include them verbatim here:

- "To what extent are designed environments responsive to different users?"
- "To what extent do environments permit changes in personal spacing?"
- "What are the psychological needs of the user that should be satisfied by the environment?"
- "How are territories used?"
- "What mechanisms and combinations of mechanisms are employed to regulate social interaction?"
- "What is the combination of mechanisms used by the consumer to regulate social interaction?"
- "Which behaviors are predominant? Which are unimportant?"
- "What seems to be the most appropriate combination most often used?"
- "How stable or changeable does the environment need to be in regard to use of these mechanisms?"
- "Does the environment need to be continually fluid or can it be relatively fixed given the group's response profile?"
- "Does the proposed design look as if it will fit the projected social-regulation style of the users?"

Third, "attempt to design responsive environments, which permit easy alternation between a state of separateness and a state of togetherness" (Altman 1975). SNS interface design is biased toward sharing and connecting and provides very few mechanisms that support flexible alteration of one's changing privacy needs. Currently, when SNS privacy controls are provided, they are not designed to be flexible. For example, Facebook allows users to hide and unhide friends from their News Feed. However, once this boundary is created, it tends to be permanent, where a hidden friend is rarely unhidden. This is

because the privacy state is not clearly visible to the user, therefore, they forget that this boundary was created. The same is true for most privacy settings because they are prone to "set it and forget it" behavior. Any privacy decisions that are enduring should be visually cued to the user so that they can be adjusted once they no longer meet SNS users' needs. Privacy features need to be designed so that SNS users can make meaningful privacy decisions in the context of interaction.

Fourth, use maladaptive coping behaviors to pinpoint areas where SNS interface design is not meeting end user privacy needs. "If privacy and its associated mechanisms are ignored or rigidly incorporated into designs . . . then people will have to struggle against the environment to achieve what they consider to be appropriate degrees of interaction" (1975). This design guideline was already presented in Chapter 4; however, it is worth reiterating here. By using coping theory as a framework to identify SNS coping behaviors, designers can improve SNS interface features to better support the boundary negotiation process. For instance, I observed that compromise, characterized as a "healthy" coping mechanism, was often excluded from SNS interface design, forcing SNS users to negotiate their boundaries with others outside of the intended SNS interface controls. Therefore, SNS interfaces may improve SNS user experience by incorporating more boundary signaling and negotiation features. For instance, Facebook's most recent update included an option to ask someone to take down a picture, rather than just giving SNS users the ability to untag themselves. A more proactive approach to pictures and tagging for confidant-disclosure management may be to allow SNS users to signal whether or not they prefer others to tag them in photos. Options could include, "Go ahead and tag me," "Only if I look great," and "Please ask me first." Then, when a friend

attempts to tag this individual in a photo, the boundary preference is communicated before the interaction occurs. For the most part, social psychology literature suggests that others are willing to comply with an individual's stated boundary preferences (Altman 1975; Katherine 1991). However, this is impossible when boundaries are not communicated clearly. Based on the interviews in Chapters 3 and 4, many boundary conflicts occurred due to miscommunication, as opposed to malicious intent.

Fifth, SNS designers should embed multiple boundary negotiation capabilities within SNS interfaces to support different types of users and their different approaches to boundary management. "Although people may not employ all mechanisms to the same degree, it may be wise to allow for the possibility that more than the current repertoire can be used" (Altman 1975). Different SNS users have different privacy needs and different strategies for meeting these needs. It is even possible that SNS interfaces could adapt with the user as they go from being a novice to an expert SNS user or provide the capability of personalization to maximize the use of mechanisms that work best for different users.

Sixth, train SNS users to properly leverage environmental capabilities. Altman suggests that "environmental awareness and environmental-usage training might help people better use, shape, and reshape their environments" (Altman 1975). In Chapter 6, feature awareness was the most important factor contributing to technology-supported privacy behaviors. Given that SNSs are technological environments, they often change quickly and without warning. However, building new or different capabilities into SNS interfaces without giving users the knowledge to properly use the capabilities, is potentially wasted. Therefore, new interface features should be introduced to SNS users

each time SNS interfaces change. Quick tutorials can be added unobtrusively to SNS interfaces with occasional reminders, instead of requiring SNS users to explore on their own or search through hundreds of pages of help documentation.

Seventh, "ensure that primary, secondary, and public territories are recognized as such and that users have appropriate degrees of control over spaces" (Altman 1975). To illustrate using Facebook, users often have boundary confusion between distinct spaces such as one's Wall/Timeline, profile, and News Feed. This boundary confusion leads to conflict. For example, Jane posts a status update on her Wall, reflecting a strong political belief. She views her Wall as a primary territory where she can uniquely express herself. However, status updates posted on one's Wall filter into friends' News Feeds. Dick becomes the recipient of Jane's Wall post and is infuriated. He posts a comment on Jane's post saying, "don't push your political beliefs on me!" Dick views his News Feed as a secondary or "interactional" territory where friends post when they want to interact with him. In turn, Jane is upset because Dick just embarrassed her to all of her friends via her Wall. Therefore, both Jane and Dick feel like their boundaries have been violated. I also see this type of boundary confusion when friends tag one another in pictures or posts that subsequently get posted to one's Wall then filtered into one's friends' News Feeds. Another problem is the rights of ownership assigned to these spaces. For instance, Facebook allows users to turn off their Wall, but they currently do not allow them to moderate Wall posts from friends before they are viewable by others. Also, Facebook users feel like they lack control over what content and from whom is added to their News Feed. If SNS designers can find ways to clarify the use and ownership of each of these spaces, they can clear up potential opportunities for interpersonal boundary conflict.

Eighth, designers should embrace the idea that meeting SNS user privacy needs can enhance SNS user experience and possibly even the benefits of online social networking. However, the current mindset is that SNSs profit from their users being more open and sharing more. Jeff Hammerbacher, an early Facebook prodigy, commented that "the best minds of my generation are thinking about how to make people click ads" (Madrigal 2012). Thus, there is an assumed conflict of interest between designing to meet SNS users' privacy needs and profiting from their lack of privacy. Yet, such a belief may be a logical fallacy. Shamelessly facilitating openness and sharing can actually have the opposite effect. Many SNS users cope with this by exhibiting a high level of self-censorship within their social networks. Thus, sharing may be widespread, but it also becomes shallow. Increasing SNS users' control over meeting their own privacy needs could lead to deeper, more meaningful sharing. For example, many SNS users currently self-censor to cater to a wide variety of audiences. They tend to emphasize the positive over the negative, but some still crave the ability to be more authentic within their SNS environments. Friend lists seem to be an overly complex means for regulating what is shared and with whom. SNS users have a hard time remembering unions and intersections between their friend groups. This conundrum has created a design problem that the HCI research community is actively trying to tackle. A design solution for this outstanding problem may be able to encourage deeper, more authentic post content from SNS users because it reduces the need to self-censor due to vague audiences. From a business perspective, being privy to such personal communications would allow SNSs to refine their target marketing to more effectively appeal to my needs. In such cases, I could be presented with ads for Zoloft, a drug for depression, or deals for four star hotels

in Juno. Finally, boundary violations and privacy concerns prevent many individuals from participating on SNSs and are often the reason users abandon SNSs. SNS users are customers, not products. Therefore, not designing to meet their interactional privacy needs can decrease engagement and increase churn on these sites, which is not in the best interest of SNS end users or agents of SNS companies.

8.3 Future Research

While each chapter summarized above provides unique insight, the bigger picture they present is that SNSs are social environments governed by social norms and processes, and the technology should support these processes. By re-characterizing SNS privacy as an interpersonal boundary regulation process, supporting multiple types of interpersonal boundaries, this research examines how well SNS environments support the interpersonal boundary regulation process as a whole. SNS privacy research and design both currently center around disclosure boundaries. SNS privacy research focuses on the ability to restrict disclosures while SNS design goals have been to propagate disclosure. As such, there has been an inherent conflict between SNS privacy and design but also a lack of support for other types of interpersonal boundary regulation. This creates an opportunity for improved technology-supported privacy mechanisms for managing relational, network, territorial, and interactional boundaries, which both researchers and designers have historically de-emphasized. For example, both relationship context and network intersection boundaries are currently only supported through friend lists or groups. My research showed that while SNS users create friend lists, they are rarely leveraged to manage these interpersonal boundaries. I found that a lack of feature awareness was partially to blame for this lack of use. However, even at high levels of

feature awareness, privacy behaviors did not align with privacy desires. This suggests that friend lists or groups may not be a sufficient mechanism for effectively maintaining relationship context or network intersection boundaries. In these types of cases, future research can explore new design solutions to manage gaps in boundary regulation support.

Additional opportunities for future research include studies that examine relationships from the theoretical model that were not presented as part of this research. For example, it would be interesting to explore the relationship between privacy behavior and privacy outcomes. If SNS users exhibit more privacy behaviors, does that equate to more optimal privacy outcomes? In the context of information disclosure, researchers have already found a positive relationship between privacy behaviors and social capital (Stutzman, Vitak et al. 2012). Is this also the case for other types of interpersonal boundaries? Numerous studies can also be done to examine contextual factors from this research as moderating variables to see if they have a significant impact on the results presented in this research. For example, what is the impact of age on the relationship between privacy desires and privacy behavior? Are there any between-group differences? Is there a gender difference when determining one's desired privacy level? Does personality impact one's desired privacy level, actual privacy level, privacy outcomes, or perceived benefits from social networking. In addition, other dependent variables can be included in this model. Although current SNS research has focused on self-esteem and social capital as derived benefits of social networking, studies could also explore the impact privacy outcomes has on SNS engagement, user satisfaction, and other key variables. Finally, SNS privacy does not have to be confined to social theories

specifically relating to interpersonal boundary regulation. I have already examined other social processes such as coping theory as it relates to boundary regulation. Other social theories, such as conflict management, negotiation, social contract theory, social constructionism, contextual integrity, and more that can potentially be applied in novel ways to better understand and design for how SNS users engage with one another through online social networks.

8.4 Conclusion

Online social networking will continue to impact social interactions world-wide for decades, maybe even centuries to come. However, the direction of this change, good or bad, depends on whether or not SNSs can work to improve social interactions while simultaneously providing users with the tools to protect themselves from the negative personal and relational consequences that come with an overabundance of sharing and connecting. New generations are joining Facebook and other SNSs, even before they have fully developed their boundaries or the skills to communicate them effectively in the real world, and this impacts both their personal and relational development outside of the SNS. "Environment and behavior are closely intertwined, almost to the point of being inseparable" (Altman 1975). Therefore, SNS environments designed to reflect real world social interactions can help facilitate consistent and enhanced social engagement both online and in the real world. For instance, the world could truly be a more connected place if the conventional definition of friend could somehow be modeled within SNS environments, instead of the real world modeling friendship after the SNS conceptualization of a "friend." Yes, friendship is characterized by sharing, but it is also characterized by respecting one another's boundaries and compromise.

Through this dissertation, I provided an in-depth analysis on interpersonal boundary regulation within SNSs by examining unique behaviors exhibited within these new social environments and applying well-established social theory to help better understand these behaviors. I addressed the questions of what types of interpersonal boundaries one must manage, how they do so, and with what means. I also provided a foundation of understanding about the interpersonal boundary regulation process, end user privacy behaviors, and the complex relationship between privacy and social networking goals. With this understanding, I presented design guidelines for improving SNS interaction design, meeting users' privacy needs, and enhancing their overall social experience. While Zuckerberg and other SNS visionaries evangelize that sharing is the new social norm, my research has shown that it does not have to be. Through effective boundary regulation, SNS users can reap the benefits of social networking without having to sacrifice their privacy to do so.

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APPENDIX A: CHAPTER 6 SURVEY INSTRUMENTS

To facilitate the ability to replicate this study, the survey details from Chapter 6 are presented in this Appendix. Screen shots for the privacy behaviors specific to the Facebook interface have not been included due to frequency of changes within the interface. All items were optional except acceptance of informed consent. Please contact the author if you want access to the survey in its entirety.

10.1 Statement of Informed Consent

Project Title and Purpose - Relationship Management within Online Social Networks (Phase 2) We are distributing a survey to better understand how people interact with others on Facebook, including individual characteristics and personality traits that make that interaction unique for different people. Part of this study will require you to log in to your Facebook account while completing the survey. By better understanding the personal experiences of Facebook users, we will be able to propose ways to improve the design of online social networking websites such as Facebook in the future.

Investigator(s) - Pamela Karr-Wisniewski, UNC Charlotte – pjkarr@uncc.edu (Primary) Dr. Heather Lipford, UNC Charlotte - Heather.Lipford@uncc.edu Dr. David Wilson, UNC Charlotte - davils@uncc.edu Kim Rosser, UNC Charlotte - krosser@uncc.edu

Eligibility - You may participate in this study if you are over 18 years old and have an active Facebook account. You may not participate in this study if you are not over 18 years old or do not have an active Facebook account.

Overall Description of Participation - You will be asked to answer questions through a web-based survey. You should answer the questions as honestly as possible. For the last part of the survey, you will be asked to log into Facebook to report some of your current usage and settings. For instance, we may ask how many Facebook friends you have or what specific permissions you allow via your privacy settings. The survey should take less than an hour.

Incentive to Participate - There will be a random drawing of survey participants for two $200 gift cards to Amazon.com once the survey is closed. Entering the drawing is optional. Each participant who opts in to enter the drawing will receive one drawing entry. As an extra incentive, if you share the survey with your friends (through Facebook, email, etc.), and they complete the survey and specify that you referred them (by supplying your email address), you will get an extra contest entry for each person you referred. Each survey participant, however, is limited to a maximum of 25 drawing entries and is eligible to receive at most one $200 gift card.

Risks and Benefits of Participation - By participating in this study, you are helping researchers develop a better understanding of how individuals interact with others on Facebook. With a better understanding of this behavior, we will be able to help educate and design interfaces that can improve this form of communication. The project may involve risks that are not currently known.

Length of Participation - Participation in this study will require no more than an hour of your time. At the end of the survey, you will be given the opportunity to sign up for a drawing for various prizes to thank you for your participation. Volunteer Statement You are a volunteer. The decision to participate in this study is completely up to you. If

you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started.

Confidentiality Statement - Any information about your participation, including your identity, is completely confidential. The following steps will be taken to ensure this confidentiality: All digital and physical information retained from your participation will be stored in a secure location only accessible by the investigators listed on this study. All data results will be anonymized or aggregated in the presentation to the academic community so that your identity will not be known.

Statement of Fair Treatment and Respect - UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the university's Research Compliance Office (704-687-3309) if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact Pamela Karr-Wisniewski (704-293-8978, pjkarr@uncc.edu) or Dr. Heather Lipford (704-687-8376, Heather.Lipford@uncc.edu).

Approval Date - This form was approved for use on February 8, 2012 for use for one year.

Participant Consent* - I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project.

*Participants were required to agree before proceeding with the survey.

10.2 Survey Questions

TABLE 64: Demographic Information

QUESTION	SCALE
What is your age?	18 – 100, over 100
What is the highest level of education you have completed?	• Less than high school • High school diploma • Some college • 2 year college degree (Associates) • 4 year college degree (Bachelors) • Some graduate school • Master's degree • Doctoral degree • Professional degree (MD, JD)
What is your ethnicity? (Pick one in which you most closely identify)	• White/Caucasian • Black/African-American • Hispanic/Latino • Asian/Pacific Islander • American Indian/Alaska Native • Other
What is your gender?	• Male • Female
What is your occupation?	Open Response
Are you a UNC Charlotte Student?	• Yes • No

TABLE 65: Information for Optional Drawing

ITEM	TEXT
ALTCON	Alternate Contact Information (Optional). By default, drawing winners will be contacted via the email address they provided. If this is not how you would like to be contacted in the event you win the drawing, please provide the best point of contact information for you below.
DRAW	Drawing for one of two $200 gift cards to Amazon.com There will be a random drawing of survey participants for one of two $200 gift cards to Amazon.com once the survey is closed (approximately mid-May). Entering the drawing is optional. Each participant who opts in to enter the drawing will receive one drawing entry. As an extra incentive, if you share the survey with your friends (through Facebook, email, etc.), and they complete the survey and specify that you referred them (by supplying your email address as their referrer), you will get an extra contest entry for each person you referred. Each survey participant, however, is limited to a maximum of 25 drawing entries and is eligible to receive at most one $200 gift card. Contest entry information is not associated with any of the information you just provided through the survey (except we will verify that each contest entrant successfully completed the survey). As a reminder, here is our confidentiality policy: Confidentiality Statement: Any information about your participation, including your identity, is completely confidential. The following steps will be taken to ensure this confidentiality: All digital and physical information retained from your participation will be stored in a secure location only accessible by the investigators listed on this study. All data results will be anonymized or aggregated in the presentation to the academic community so that your identity will not be known. Would you like to enter this drawing?
EMAIL	What is your email address? (We need this in order for you to participate in the drawing.)
REFER	Did anyone refer you to take this survey? If so, please provide their email address in the space provided.

TABLE 66: Self-Awareness (Fenigstein, Scheier et al. 1975)

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you. There are no ‘right’ or ‘wrong’ answers—just be honest. (1 = Strongly Disagree, 7 = Strongly Agree)

ITEM	DIMENSION	MEASURE
ANX1	Anxiety	I get embarrassed very easily.
ANX2R	Anxiety	I don't find it hard to talk to strangers.
ANX3	Anxiety	I feel anxious when I speak in front of a group.
ANX4	Anxiety	It takes me time to overcome my shyness in new situations.
ANX5	Anxiety	I have trouble working when someone is watching me.
ANX6	Anxiety	Large groups make me nervous.
APRIV1	Private Self-Awareness	I'm aware of the way my mind works when I work through a problem.
APRIV10	Private Self-Awareness	I'm always trying to figure myself out.
APRIV2	Private Self-Awareness	I'm alert to changes in my mood.
APRIV3	Private Self-Awareness	I'm often the subject of my own fantasies.
APRIV4	Private Self-Awareness	I reflect about myself a lot.
APRIV5R	Private Self-Awareness	I never scrutinize myself.
APRIV6R	Private Self-Awareness	I'm constantly examining my motives.
APRIV7R	Private Self-Awareness	Generally, I'm not very aware of myself.
APRIV8	Private Self-Awareness	I'm generally attentive to my inner feelings.
APRIV9	Private Self-Awareness	I sometimes have the feeling that I'm off somewhere watching myself.
APUB1	Public Self-Awareness	I'm usually aware of my appearance.
APUB2	Public Self-Awareness	One of the last things I do before I leave my house is look in the mirror.
APUB3	Public Self-Awareness	I'm concerned about what other people think of me.
APUB4	Public Self-Awareness	I'm concerned about my style of doing things.
APUB5	Public Self-Awareness	I usually worry about making a good impression.
APUB6	Public Self-Awareness	I'm concerned about the way I present myself.
APUB7	Public Self-Awareness	I'm self-conscious about the way I look.

TABLE 67: SNS Activities (Koroleva, Krasnova et al. 2011)

How often do you perform the following social networking activities on Facebook? (1 = Almost Never, 7 = Almost Every Day)

ITEM	DIMENSION	MEASURE
ACT1	Active Participation	Share thoughts and feelings
ACT2	Active Participation	React to what friends post
ACT3	Active Participation	Share something you are interested in
ACT4	Active Participation	Post something (status update, photos, links)
ACT5	Active Participation	Comment on what friends post
ACT6	Active Participation	Share your impression with your friends
CHAT	Active Participation	Use Facebook chat
BROW1	Social Browsing	Browse through friends of your friends
BROW2	Social Browsing	Browse the profiles of your friends
BROW3	Social Browsing	Look at profiles of people not in your friend list
PASS1	Passive Consumption	Click on the content shared by friends (photos, videos, links)
PASS2	Passive Consumption	Follow the news of your friends
PASS3	Passive Consumption	Look through the News Feed
SEAR1	Social Search	Add people suggested by Facebook
SEAR2	Social Search	Search for people to add
SEAR3	Social Search	Send friend requests

TABLE 68: Facebook Intensity Index (Ellison, Steinfield et al. 2007; Ellison, Steinfield et al. 2010)

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you. (Does not apply to items FBI1, FBUSE, FRIENDS below.) (1 = Strongly Disagree, 2 = Strongly Agree)

ITEM	MEASURE
FBI1	In the past week, on average, approximately how many minutes per day have you spent on Facebook? • less than 10 • 10-30 • 31-60 • 1-2 hours • 2-3 hours • more than 3 hours
FBI2	Facebook is part of my everyday activity.
FBI3	I am proud to tell people I'm on Facebook.
FBI4	Facebook has become part of my daily routine.
FBI5	I feel out of touch when I haven't logged onto Facebook for a while.
FBI6	I feel I am part of the Facebook community.
FBI7	I would be sorry if Facebook shut down.
FBUSE	How long have you been an active member of Facebook? • I do not have a Facebook account • Less than 6 months • More than 6 months but less than a year • Over a year but less than 2 years • Over 2 years but less than 4 years • Over 4 years but less than 6 years • Over 6 years
FRIENDS	How many Facebook Friends do you have? To find this: Your Answer: (Enter a numeric value)

TABLE 69: Desired Privacy Level

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you in regards to Facebook. Please read each statement carefully so that you do not confuse things you "do" want with those that you "do not." (1 = Strongly Disagree, 7 = Strongly Agree)

ITEM	BOUNDARY TYPE	MEASURE
CONN1	Relationship Connection	I only want to accept intimate friends and family members as Facebook friends.
CONN2	Relationship Connection	I do not want to have Facebook friends who are no longer real friends.
CONN3	Relationship Connection	I only want people in my Facebook social network who I associate with on a regular basis in real life.
CONT1	Relationship Context	I want my one-on-one interactions on Facebook to be appropriate and unique based on my relationship with that specific person.
CONT2	Relationship Context	I want my interactions on Facebook to be different between me and a close friend than they would be with an acquaintance.
CONT3	Relationship Context	I want to make a distinction between my friends based on the type of relationship I have with them. For example, family, friends, co-workers, etc.
DISC1	Network Discovery	I do not want others to have access to my friends through my Facebook friend list.
DISC2	Network Discovery	I want to hide my friend list so that others cannot browse my Facebook friends.
DISC3	Network Discovery	I want to restrict others in my network from being able to see who I am and am not friends with on Facebook.
INTER1	Network Intersection	I want to avoid letting specific groups of friends interact with each other on Facebook.
INTER2	Network Intersection	I want to moderate how my different groups of friends interact with one another on my Facebook page.
INTER3	Network Intersection	I want to keep my different social circles separate from each other on Facebook.
IN1	Inward-Facing Territories	I want to hide News Feed updates from others that I would rather not see.
IN2	Inward-Facing Territories	I want to decide whose updates show up in my News Feed.
IN3	Inward-Facing Territories	I want to pick and choose what kinds of updates show up in my News Feed.
OUT1	Outward-Facing Territories	I want to remove any content I do not want from my Timeline/Wall.

Table 69 (Continued)

ITEM	BOUNDARY TYPE	MEASURE
OUT2	Outward-Facing Territories	I want to manage everything that shows up on my Timeline/Wall for others to see.
OUT3	Outward-Facing Territories	I want to approve all content before it is posted to my Facebook Timeline/Wall.
SELF1	Self Disclosure	I do not want to post very intimate things about myself on Facebook.
SELF2	Self Disclosure	I want to be able to choose what to share and what to hold back on Facebook.
SELF3	Self Disclosure	I want to share only minimal information about myself on Facebook.
CONF1	Confidant Disclosure	I want my Facebook friends to keep personal information they know about me between us.
CONF2	Confidant Disclosure	I do not want my friends to tag me in photos or posts without my permission.
CONF3	Confidant Disclosure	I want to limit what personal information my friends share about me on Facebook.
DIS1	Interactional Disabling	I want to be able to turn off chat, my Wall, or other Facebook features that allow others to interact with me anytime they want to.
DIS2	Interactional Disabling	I want to disable the ability for my friends to contact me on Facebook when I want to be left alone.
DIS3	Interactional Disabling	I want to limit the different ways my friends can communicate with me via Facebook.
BLOCK1	Interactional Blocking	I want to prevent some people on Facebook from having any access to me what-so-ever.
BLOCK2	Interactional Blocking	I want to block certain people from finding me or knowing what I am up to on Facebook.
BLOCK3	Interactional Blocking	When I do not want to interact with someone anymore, I want to be able to sever all contact with them on Facebook.

TABLE 70: Risk Awareness

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you in regards to Facebook. (1 = Strongly Disagree, 7 = Strongly Agree)

ITEM	BOUNDARY TYPE	MEASURE
RCONN1	Relationship Connection	Being too open about who I accept as friends on Facebook creates a high potential for privacy loss.
RCONN2	Relationship Connection	Being too open about who I accept as friends on Facebook has caused problems for me in the past.
RCONT1	Relationship Context	The way Facebook treats all of my connections as 'friends' with equal footing creates a high potential for privacy loss.
RCONT2	Relationship Context	The way Facebook treats all of my connections as 'friends' with equal footing has caused problems for me in the past.
RDISC1	Network Discovery	Others being able to browse my friend list creates a high potential for privacy loss.
RDISC2	Network Discovery	Others being able to browse my friend list has caused problems for me in the past.
RINTER1	Network Intersection	Overlap between my different social circles on Facebook creates a high potential for privacy loss.
RINTER2	Network Intersection	Overlap between my different social circles on Facebook has caused problems for me in the past.
RIN1	Inward-Facing Territories	Not being able to regulate what filters into my News Feed creates a high potential for privacy loss.
RIN2	Inward-Facing Territories	Not being able to regulate what filters into my News Feed has caused problems for me in the past.
ROUT1	Outward-Facing Territories	Content posted by me or others on my Facebook Timeline/Wall creates a high potential for privacy loss.
ROUT2	Outward-Facing Territories	Content posted by me or others on my Facebook Timeline/Wall has caused problems for me in the past.
RSELF1	Self Disclosure	Disclosing too much personal information on Facebook creates a high potential for privacy loss.
RSELF2	Self Disclosure	Disclosing too much personal information on Facebook has caused problems for me in the past.
RCONF1	Confidant Disclosure	My Facebook friends sharing personal information about me via Facebook creates a high potential for privacy loss.
RCONF2	Confidant Disclosure	My Facebook friends sharing personal information about me via Facebook has caused problems for me in the past.

Table 70 (Continued)

ITEM	BOUNDARY TYPE	MEASURE
RDIS1	Interactional Disabling	My Facebook friends being able to initiate contact with me (through chat or posting on my Timeline/Wall) creates a high potential for privacy loss.
RDIS2	Interactional Disabling	My Facebook friends being able to initiate contact with me (through chat or posting on my Wall) has caused problems for me in the past.
RBLOCK1	Interactional Blocking	When people who are not my Facebook friends try to interact with me on Facebook, it creates a high potential for privacy loss.
RBLOCK2	Interactional Blocking	People who are not my Facebook friends but try to interact with me on Facebook anyway have caused problems for me in the past.

TABLE 71: Technology-Supported Privacy Negotiation Behaviors

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
NFHID	Inward-Facing Territories	How often have you done the following to modify posts on your News Feed? To do this: You would have had to click on the drop down arrow at the top, right corner of a post on your News Feed as shown below.	Hidden a story	1 = Never, 7 = Always
NFS	Inward-Facing Territories	How often have you done the following to modify posts on your News Feed? To do this: You would have had to click on the drop down arrow at the top, right corner of a post on your News Feed as shown below.	Changed your subscription settings to a Facebook friend (All Updates, Most Updates, Only Important)	1 = Never, 7 = Always
NFUN	Inward-Facing Territories	How often have you done the following to modify posts on your News Feed? To do this: You would have had to click on the drop down arrow at the top, right corner of a post on your News Feed as shown below.	Unsubscribed from a Facebook friend	1 = Never, 7 = Always
NFUNP	Inward-Facing Territories	How often have you done the following to modify posts on your News Feed? To do this: You would have had to click on the drop down arrow at the top, right corner of a post on your News Feed as shown below.	Unsubscribed from status updates by a Facebook friend	1 = Never, 7 = Always

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
NFSP	Inward-Facing Territories	How often have you done the following to modify posts on your News Feed? To do this: You would have had to click on the drop down arrow at the top, right corner of a post on your News Feed as shown below.	Reported story or spam	1 = Never, 7 = Always
UNFRIEND	Relationship Connection	How often have you "Unfriended" in the past? To do this, you could have gone to a Facebook friend's Timeline/Wall, clicked on "Friends" then clicked "Unfriend" as shown below.	Your Answer:	1 = Never, 7 = Always
HIDDEN	Relationship Connection	How many "Hidden" friend requests do you have? To find this: From the same screen as the previous question, click "See Hidden Requests." Count and Report the number of "Hidden Requests" that you have. Note: Click "Show More" if all hidden friend requests do not show up on the first page. Your Answer:		• 0 • 1-3 • 4-6 • 7-10 • More than 10
HIDO	Relationship Connection	How often have you "Hidden" a friend request (instead of "Confirming" the friend request)? To do this, you would have chosen "Not Now" instead of "Confirm" the friend request as shown below. Note: This is essentially the same thing as rejecting or not accepting the friend request.	Your Answer:	1 = Never, 7 = Always

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
BLUS	Interactional Blocking	From the same "Blocked People and Apps" privacy settings screen, report how many "Blocked users" you have. To find this: Count and report the number of "Blocked users" you have listed. Your Answer:		• 0 • 1-3 • 4-6 • 7-10 • More than 10
RESTR	Interactional Blocking	Please find and report your privacy settings for "Blocked People and Apps." How many Facebook friends have you added to your "Restricted List?" To find this: From your "Privacy Settings" page, Click "Manage Blocking" next to "Blocked People and Apps." Click on "Edit List" by "Add friends to your Restricted list." Count and report the number of friends on your restricted list as shown below: Your Answer:		• 0 • 1-3 • 4-6 • 7-10 More than 10
CIEM	Self-Disclosure	Report your Facebook Profile settings for your "Contact Info." To do this, click on the "pencil" icon to "Edit" your "Contact Info" as shown below. Click the drop down arrow to the rght of each type of information and report your current privacy settings for each of the following. Your Answers:	Email (Primary Only)	• I did not provide this information to Facebook • Public • Friends • Only Me • Custom • Friend List (Any customized friend list)

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
CIAD	Self-Disclosure	Report your Facebook Profile settings for your "Contact Info." To do this, click on the "pencil" icon to "Edit" your "Contact Info" as shown below. Click the drop down arrow to the rght of each type of information and report your current privacy settings for each of the following. Your Answers:	Address (Street Address)	• I did not provide this information to Facebook • Public • Friends • Only Me • Custom Friend List (Any customized friend list)
CIIM	Self-Disclosure	Report your Facebook Profile settings for your "Contact Info." To do this, click on the "pencil" icon to "Edit" your "Contact Info" as shown below. Click the drop down arrow to the rght of each type of information and report your current privacy settings for each of the following. Your Answers:	IM Screen Name (Primary Only)	• I did not provide this information to Facebook • Public • Friends • Only Me • Custom Friend List (Any customized friend list)
CIMOB	Self-Disclosure	Report your Facebook Profile settings for your "Contact Info." To do this, click on the "pencil" icon to "Edit" your "Contact Info" as shown below. Click the drop down arrow to the rght of each type of information and report your current privacy settings for each of the following. Your Answers:	Mobile Phone (Primary Only)	• I did not provide this information to Facebook • Public • Friends • Only Me • Custom Friend List (Any customized friend list)

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
CIOP	Self-Disclosure	Report your Facebook Profile settings for your "Contact Info." To do this, click on the "pencil" icon to "Edit" your "Contact Info" as shown below. Click the drop down arrow to the rght of each type of information and report your current privacy settings for each of the following. Your Answers:	Other Phone (Primary Only)	• I did not provide this information to Facebook • Public • Friends • Only Me • Custom Friend List (Any customized friend list)
LIST	Relationship Context/ Network Intersection	How many Facebook friends lists have you created? To find this: Count and Report the friend lists that you have created (Note: Facebook creates some friend lists for you by default). The ones you created are the lists that have an icon of a person by them as shown below. Your Answer:		• 0 • 1-3 • 4-6 • 7-10 More than 10
LISTN	Relationship Context/ Network Intersection	Here are a number of statements that may or may not apply to you. Select the answer that indicates the degree of frequency each statement applies to you.	I categorize new Facebook friends into friend lists.	1 = Never, 7 = Always
LISTO	Relationship Context/ Network Intersection	Here are a number of statements that may or may not apply to you. Select the answer that indicates the degree of frequency each statement applies to you.	I go back and categorized existing Facebook friends into friend lists.	1 = Never, 7 = Always

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
PICL	Relationship Context/ Network Intersection	How often have you posted a PHOTO ALBUM to ONE or MORE of these friend lists (opposed to all your Facebook friends)? To do this: You would have had to specify which friend list(s) at the bottom right corner of the photo album as shown below. Or, you could do this for an existing photo album by clicking on drop down box on the bottom, right corner of the album and choosing a friend list as shown below.	Your Answer:	1 = Never, 7 = Always
POSTL	Relationship Context/ Network Intersection	How often have you posted a STATUS UPDATE to ONE or MORE of these friend lists (opposed to all your Facebook friends)? To do this: You would have had to specify which friend list(s) at the bottom right corner of the status update bar as shown below. Or, you could do this by clicking on the friend list to see updates for that friend list, then post a status update via that page.	Your Answer:	1 = Never, 7 = Always
CWALD	Outward-Facing Territories/ Confidant Disclosure	How often have you done any of the following to posts that your Facebook friends made on your Timeline or Wall? To do this, from your Timeline or Wall, you would have had to click the "pencil" icon on the top, right hand corner of the post as shown below.	Deleted Post	1 = Never, 7 = Always

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
CWALS	Outward-Facing Territories/ Confidant Disclosure	How often have you done any of the following to posts that your Facebook friends made on your Timeline or Wall? To do this, from your Timeline or Wall, you would have had to click the "pencil" icon on the top, right hand corner of the post as shown below.	Reported/ Marked as Spam	1 = Never, 7 = Always
TAKED	Outward-Facing Territories/ Confidant Disclosure	How often have you asked a Facebook friend to "take down" a POST or PHOTO that they tagged to show up on your Timeline or Wall? To do this, from your Timeline/Wall, you would have had to click the "pencil" icon on the top, right hand corner then click "Remove Tag" as shown below. Next, you would choose, "I want to remove this tag" and click "Continue." Next, you would choose "Ask [Facebook friend] to take down the post." Then, you would be able to type a Facebook message to your friend to ask them to remove the post.	Your Answer:	1 = Never, 7 = Always
CWALH	Outward-Facing Territories/ Confidant Disclosure	How often have you done any of the following to posts that your Facebook friends made on your Timeline or Wall? To do this, from your Timeline or Wall, you would have had to click the "pencil" icon on the top, right hand corner of the post as shown below.	Hidden from Timeline	1 = Never, 7 = Always

Table 71 (Continued)

ITEM	BOUNDARY TYPE	INSTRUCTIONS	MEASURE	SCALE
UNTAG	Outward-Facing Territories/ Confidant Disclosure	How often have you "Untagged" POSTS or PHOTOS that your Facebook friends made on your Timeline or Wall? To do this, from your Timeline or Wall, you would have had to click the "pencil" icon on the top, right hand corner then click "Remove Tag" as shown below. Next, you would choose, "I want to remove this tag" and click "Continue." Next, you would choose "Remove the tag [Facebook friend] created." Then, you would click "Okay."	Your Answer:	1 = Never, 7 = Always
SEE	Outward-Facing Territories/ Confidant Disclosure	From the same "Timeline and Tagging" privacy settings screen, report the setting for "Who can see what others post on your timeline?" To find this: Your Answer:		• Public • Friends of Friends • Friends • Only Me • Custom • Friend List (Any customized friend list)
TAG	Outward-Facing Territories/ Confidant Disclosure	From the same "Timeline and Tagging" privacy settings screen, report the setting for "Who can see posts that appear on your timeline because you've been tagged?" To find this: Your Answer:		• Public • Friends of Friends • Friends • Custom • Friend List (Any customized friend list)

TABLE 72: Burden and Feature Awareness

Measures for Burden and Feature Awareness (Findlater and McGrenere 2010) were asked subsequent to each of the technology-supported privacy negotiation behaviors shown above.

CONSTRUCT	MEASURE	SCALE
BURDEN	Please answer this question based on the feature or setting shown above. How much effort do you feel it takes to customize this feature or setting effectively?	1 = None at All, 7 = A Great Deal
FEATURE AWARENESS	For the feature or setting shown above, please indicate whether you remember noticing it prior to participating in this survey.	• Yes, I definitely recall seeing this item • I vaguely recall seeing this item • No, I didn't see this item

APPENDIX B: CHAPTER 6 SUPPLEMENTAL ANALYSIS

Appendix B supplements the statistical analysis provided in Chapter 6.

TABLE 73: Normality Assumption Violations

Construct	**Item Name**	**Skewness**	**Kurtosis**
Private Self Awareness	APRIV1	-1.578	5.135
	APRIV2	-1.041	1.865
	APRIV5	-1.242	2.039
	APRIV7	-1.427	2.192
	APRIV8	-1.490	3.610
	PRIV10	-0.225	-1.039
Public Self Awareness	APUB1	-1.204	1.976
	APUB2	0.261	-1.144
	APUB6	-1.346	2.656
SNS Desired Privacy Level – Inward-facing Territories	IN2	-1.130	0.848
	IN3	-1.648	3.987
SNS Desired Privacy Level – Outward-facing Territories	OUT1	-1.522	2.517
	OUT2	-1.511	2.493
	OUT3	-1.242	1.627
SNS Desired Privacy Level – Self Disclosure	SELF1	-2.528	7.920
	SELF2	-3.974	21.117
SNS Desired Privacy Level – Confidant Disclosure	CONF1	-2.561	9.755
	CONF3	-1.024	1.270
SNS Desired Privacy Level – Relationship Connection	CONN1	1.549	-0.608
SNS Desired Privacy Level – Relationship Context	CONT1	-1.816	5.408
	CONT2	-1.565	3.958
	CONT3	-0.987	1.098
SNS Desired Privacy Level – Network Intersection	INTER1	1.684	-0.510
SNS Desired Privacy Level – Interactional Blocking	BLOCK1	-1.32	1.734
	BLOCK2	-1.066	0.802
	BLOCK3	-1.023	1.021
SNS Desired Privacy Level – Interactional Disabling	DIS1	1.694	0.304
Risk Awareness – Self Disclosure	RSELF1	-1.722	3.663
Risk Awareness – Confidant Disclosure	RCONF1	-1.199	1.667
Technology-Supported Boundary Negotiation Behaviors (All)	DEFAULT	-0.98387	2.964049
	CONNECT	0.002712	-1.21441
	REQ	0.046314	4.352075
	WALL	-0.74564	18.02973
	SEE	-0.44634	3.551196
	TAG	-1.48499	5.049941
	TAGR	-0.71065	3.122638

Table 73 (Continued)

Construct	Item Name	Skewness	Kurtosis
	TAGRO	-0.20953	1.922738
	APP	-0.19443	-1.66391
	RESTR	2.011189	4.094433
	BLUS	1.769776	3.270361
	BLAPI	1.608938	2.382883
	BLEV	2.90007	12.54701
	BLAP	0.473212	-1.05926
	FRLIST	0.05542	2.025017
	PEND	1.309779	0.521974
	POSTL	1.408508	1.470179
	PICL	1.810232	2.542763
	NFHID	0.15077	-1.07137
	CWALS	1.215477	1.636348
	TAKED	1.638733	3.594557
	SCHAT	0.689416	-1.22008
	SCHATF	0.14559	-1.40947
	BASBD	1.058837	0.597498
	BADIN	-0.24932	-1.28849
	BARE	-0.26847	-1.14768
	CIEM	1.007579	0.725047
	CIMOB	-1.07598	0.39339
	CIOP	-2.2202	4.755085
	CIAD	-2.08849	3.863399
Feature Awareness (All)	DEFAULT1	-2.18091	5.606166
	REQ1	-1.12646	0.966618
	MESS1	-1.14386	1.09681
	RESTR1	0.061547	-1.51518
	BLUS1	-0.26531	-1.08883
	BLAPI1	0.135998	-1.0827
	PEND1	-2.08117	4.286642
	HIDO1	-1.2842	1.493378
	UNFRIEND1	-1.5604	2.328349
	NF1	-1.2838	1.378208
	CWAL1	-1.30062	1.431382
	BA1	-2.29164	5.778788
	CI1	-2.26383	5.670405

TABLE 74: 1.1 Descriptive Statistics for Self-Awareness

	N	Mean	Std. Deviation
APRIV1	307	5.73	1.001
APRIV2	308	5.41	1.111
APRIV3	305	4.39	1.557
APRIV4*	307	5.03	1.355
APRIV5	308	5.68	1.166
APRIV6	306	4.22	1.528
APRIV7*	308	5.56	1.279
APRIV8	305	5.30	1.219
APRIV9*	308	2.68	1.646
APRIV10	308	4.22	1.709
APUB1	308	5.71	1.087
APUB2	306	3.55	1.928
APUB3*	308	4.47	1.465
APUB4	304	4.15	1.525
APUB5*	307	4.78	1.458
APUB6*	305	4.97	1.268
APUB7*	306	4.49	1.571
ANX1	305	3.95	1.566
ANX2*	307	3.41	1.742
ANX3	308	4.47	1.912
ANX4	306	4.15	1.743
ANX5*	308	3.86	1.777
ANX6*	306	3.55	1.791
Valid N (listwise)	279		

*Item remained in final measure for analysis

APPENDIX C: CHAPTER 7 SURVEY INSTRUMENTS

To facilitate the ability to replicate this study, the survey details from Chapter 7 are presented in this Appendix. All items were optional except acceptance of informed consent. For items to measure desired privacy level, reference Appendix A, TABLE 69. Please contact the author if you want access to the survey in its entirety.

12.1 Statement of Informed Consent

Project Title and Purpose - Relationship Management within Online Social Networks (Phase 2) We are distributing a survey to better understand how people interact with others on Facebook, including individual characteristics and personality traits that make that interaction unique for different people. By better understanding the personal experiences of Facebook users, we will be able to propose ways to improve the design of online social networking websites such as Facebook in the future.

Investigator(s) - Pamela Karr-Wisniewski, UNC Charlotte – pjkarr@uncc.edu (Primary) Dr. Heather Lipford, UNC Charlotte - Heather.Lipford@uncc.edu Dr. David Wilson, UNC Charlotte - davils@uncc.edu Kim Rosser, UNC Charlotte - krosser@uncc.edu

Eligibility - You may participate in this study if you are over 18 years old and have an active Facebook account. You may not participate in this study if you are not over 18 years old or do not have an active Facebook account.

Overall Description of Participation - You will be asked to answer questions through a web-based survey. You should answer the questions as honestly as possible. The survey should take approximately half an hour.

Incentive to Participate - There will be a random drawing of survey participants for two $100 gift cards to Amazon.com once the survey is closed. Entering the drawing is optional. Each participant who opts in to enter the drawing will receive one drawing entry. As an extra incentive, if you share the survey with your friends (through Facebook, email, etc.), and they complete the survey and specify that you referred them (by supplying your email address), you will get an extra contest entry for each person you referred. Each survey participant, however, is limited to a maximum of 25 drawing entries and is eligible to receive at most one $100 gift card.

Risks and Benefits of Participation - By participating in this study, you are helping researchers develop a better understanding of how individuals interact with others on Facebook. With a better understanding of this behavior, we will be able to help educate and design interfaces that can improve this form of communication. The project may involve risks that are not currently known.

Length of Participation - Participation in this study will require no more than thirty minutes of your time. At the end of the survey, you will be given the opportunity to sign up for a drawing to thank you for your participation.

Volunteer Statement - You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started.

Confidentiality Statement - Any information about your participation, including your identity, is completely confidential. The following steps will be taken to ensure this confidentiality: All digital and physical information retained from your participation will

be stored in a secure location only accessible by the investigators listed on this study. All data results will be anonymized or aggregated in the presentation to the academic community so that your identity will not be known.

Statement of Fair Treatment and Respect - UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the university's Research Compliance Office (704-687-3309) if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact Pamela Karr-Wisniewski (704-293-8978, pjkarr@uncc.edu) or Dr. Heather Lipford (704-687-8376, Heather.Lipford@uncc.edu).

Approval Date - This form was approved for use on February 8, 2012 for use for one year.

Participant Consent* - I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project.

*Participants were required to agree before proceeding with the survey.

12.2 Survey Questions

For measures for desired privacy level, Facebook intensity index, SNS Activities, demographics, and optional drawing information, please refer to Appendix A.

TABLE 75: Big 5 Personality (Gosling, Rentfrow et al. 2003)

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other. I see myself as (1 = Strongly Disagree, 7 = Strongly Agree):

ITEM	MEASURE
PERS1	Extroverted, enthusiastic
PERS2	Critical, quarrelsome
PERS3	Dependable, self-disciplined
PERS4	Anxious, easily upset
PERS5	Open to new experiences, complex
PERS6	Reserved, quiet
PERS7	Sympathetic, warm
PERS8	Disorganized, careless
PERS9	Calm, emotionally stable
PERS10	Conventional, uncreative

TABLE 76: Self-Esteem (Rosenberg 1989)

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you (1 = Strongly Disagree, 7 = Strongly Agree).

ITEM	MEASURE
SE1	I feel that I'm a person of worth, at least on an equal plane with others.
SE2	I feel that I have a number of good qualities.
SE3	All in all, I am inclined to feel that I am a failure.
SE4	I am able to do things as well as most other people.
SE5	I feel I do not have much to be proud of.
SE6	I take a positive attitude toward myself.
SE7	On the whole, I am satisfied with myself.
SE8	I wish I could have more respect for myself.
SE9	I certainly feel useless at times.
SE10	At times I think I am no good at all.

TABLE 77: Achieved Privacy Level

The following statements should reflect your actual experience using Facebook. Also, pay attention to read the question carefully so that you do not confuse things you "have" experienced with those that you "have not." (1 = Strongly Disagree, 7 = Strongly Agree)

ITEM	BOUNDARY TYPE	MEASURE
AIN1	Inward-Facing Territories	I hide News Feed updates from others that I would rather not see.
AIN2	Inward-Facing Territories	I decide whose updates show up in my News Feed.
AIN3	Inward-Facing Territories	I pick and choose what kinds of updates show up in my News Feed.
AOUT1	Outward-Facing Territories	I remove any content I do not want from my Timeline/Wall.
AOUT2	Outward-Facing Territories	I manage everything that shows up on my Timeline/Wall for others to see.
AOUT3	Outward-Facing Territories	I approve all content before it is posted to my Facebook Timeline/Wall.
ASELF1	Self Disclosure	I do not post very intimate things about myself on Facebook.
ASELF2	Self Disclosure	I choose what to share and what to hold back on Facebook.
ASELF3	Self Disclosure	I share only minimal information about myself on Facebook.
ACONF1	Confidant Disclosure	My Facebook friends keep personal information they know about me between us.
ACONF2	Confidant Disclosure	My friends do not tag me in photos or posts without my permission.
ACONF3	Confidant Disclosure	I limit what personal information my friends share about me on Facebook.
ACONN1	Relationship Connection	I only accept intimate friends and family members as Facebook friends.
ACONN2	Relationship Connection	I do not have Facebook friends who are no longer real friends.
ACONN3	Relationship Connection	I only have people in my Facebook social network who I associate with on a regular basis in real life.
ACONT1	Relationship Context	My one-on-one interactions on Facebook are appropriate and unique based on my relationship with that specific person.
ACONT2	Relationship Context	My interactions on Facebook are different between me and a close friend than they are with an acquaintance.
ACONT3	Relationship Context	I make a distinction between my friends based on the type of relationship I have with them. For example, family, friends, co-workers, etc.
AINTER1	Network Intersection	I avoid letting specific groups of friends interact with each other on Facebook.
AINTER2	Network Intersection	I moderate how my different groups of friends interact with one another on my Facebook page.

Table 77 (Continued)

ITEM	BOUNDARY TYPE	MEASURE
AINTER3	Network Intersection	I keep my different social circles separate from each other on Facebook.
ADISC1	Network Discovery	Others do not have access to my friends through my Facebook friend list.
ADISC2	Network Discovery	I hide my friend list so that others cannot browse my Facebook friends.
ADISC3	Network Discovery	I restrict others in my social network from being able to see who I am and am not friends with on Facebook.
ABLOCK1	Interactional Blocking	I prevent some people on Facebook from having any access to me what-so-ever.
ABLOCK2	Interactional Blocking	I block certain people from finding me or knowing what I am up to on Facebook.
ABLOCK3	Interactional Blocking	When I do not want to interact with someone anymore, I sever all contact with them on Facebook.
ADIS1	Interactional Disabling	I turn off chat, my Timeline/Wall, or other Facebook features that allow others to interact with me anytime they want to.
ADIS2	Interactional Disabling	I disable the ability for my friends to contact me on Facebook when I want to be left alone.
ADIS3	Interactional Disabling	I limit the different ways my friends can communicate with me via Facebook.

TABLE 78: Social Capital (Williams 2006; Ellison, Vitak et al. 2011)

Select the answer that indicates the extent to which you agree or disagree that each statement applies to you regarding your Facebook friends (on average). (1 = Strongly Disagree, 7 = Strongly Agree)

ITEM	DIMENSION	MEASURE
BRIDGE1	Bridging	Talking with people on Facebook makes me curious about other places in the world.
BRIDGE2	Bridging	Interacting with people on Facebook makes me feel like a part of a larger community.
BRIDGE3	Bridging	Interacting with people on Facebook reminds me that everyone in the world is connected.
BRIDGE4	Bridging	Interacting with people on Facebook makes me want to try new things.
BRIDGE5	Bridging	Interacting with people on Facebook gives me new people to talk to.
BRIDGE6	Bridging	I am willing to spend time to support general Facebook community activities.
BRIDGE7	Bridging	On Facebook, I come into contact with new people all the time.
BRIDGE8	Bridging	Interacting with people on Facebook makes me interested in things that happen outside of my town.
BRIDGE9	Bridging	Interacting with people on Facebook makes me interested in what people unlike me are thinking.
BRIDGE10	Bridging	Interacting with people on Facebook makes me feel connected to the bigger picture.
BOND1	Bonding	The people I interact with on Facebook would be good job references for me.
BOND2	Bonding	The people I interact with on Facebook would share their last dollar with me.
BOND3R	Bonding	There is no one on Facebook that I feel comfortable talking to about intimate personal problems.
BOND4	Bonding	There are several people on Facebook I trust to solve my problems.
BOND5	Bonding	The people I interact with on Facebook would help me fight an injustice.
BOND6	Bonding	There is someone on Facebook I can turn to for advice about making very important decisions.
BOND7	Bonding	The people I interact with on Facebook would put their reputation on the line for me.
BOND8	Bonding	When I feel lonely, there are several people on Facebook I can talk to.
BOND9R	Bonding	I do not know people on Facebook well enough to get them to do anything important.

Table 78 (Continued)

ITEM	DIMENSION	MEASURE
BOND10	Bonding	If I needed an emergency loan of $500, I know someone on Facebook I can turn to.
MAINT1	Maintained	I would be able to find information about a job or internship from a past acquaintance on Facebook.
MAINT2	Maintained	If I needed to, I could ask a past acquaintance to do a small favor for me through Facebook.
MAINT3	Maintained	On Facebook, I'd be able to find out about events in another town from a past acquaintance living there.
MAINT4	Maintained	It would be easy to find people on Facebook to invite to a school reunion.
MAINT5	Maintained	Because of Facebook, I'd be able to stay with a past acquaintance if traveling to a different city.

APPENDIX D: CHAPTER 7 SUPPLEMENTAL ANALYSIS

Appendix D supplements the statistical analysis presented in Chapter 7.

TABLE 79: Descriptive Statistics for Desired Privacy Level and Achieved Privacy Level

	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
IN1	311	5.78	1.198	-.986	.541
IN2	314	5.43	1.295	-.813	.484
IN3	313	5.55	1.255	-.844	.530
OUT1	314	6.26	.973	-1.606	2.865
OUT2	313	5.50	1.446	-.826	.025
OUT3	315	5.09	1.559	-.529	-.501
SELF1	315	6.30	1.103	-2.031	4.357
SELF2	315	6.25	.866	-1.255	1.548
SELF3	315	5.28	1.382	-.563	-.350
CONF1	315	5.80	1.167	-1.111	1.382
CONF2	315	4.82	1.724	-.392	-.774
CONF3	313	5.96	1.183	-1.265	1.427
CONN1	312	3.48	1.580	.441	-.654
CONN2	312	4.69	1.480	-.148	-.791
CONN3	314	4.02	1.627	.013	-.979
CONT1	315	5.33	1.262	-.668	.243
CONT2	315	5.12	1.319	-.352	-.407
CONT3	315	4.48	1.558	-.200	-.623
INTER1	315	3.83	1.752	.130	-.761
INTER2	311	4.26	1.507	-.029	-.327
INTER3	312	4.31	1.564	.047	-.676
DISC1	315	4.44	1.723	-.107	-.954
DISC2	314	4.00	1.580	.230	-.572
DISC3	315	4.31	1.691	-.027	-.874
BLOCK1	315	5.28	1.744	-.861	-.202
BLOCK2	315	5.43	1.551	-.781	-.285
BLOCK3	313	5.66	1.171	-.588	-.308
DIS1	311	5.41	1.622	-.927	.033
DIS2	314	4.53	1.681	-.251	-.832
DIS3	314	4.53	1.421	-.129	-.385
AIN1	312	4.55	1.873	-.413	-1.100
AIN2	309	4.47	1.880	-.333	-1.128
AIN3	308	4.33	1.792	-.248	-1.169
AOUT1	313	5.52	1.538	-1.193	.830
AOUT2	308	4.74	1.700	-.563	-.582
AOUT3	309	3.85	1.849	.170	-1.096
ASELF1	310	5.96	1.274	-1.524	2.171

Table 79 (Continued)

	N	Mean	Std. Deviation	Skewness	Kurtosis
ASELF2	310	5.99	1.213	-1.830	4.124
ASELF3	309	5.45	1.387	-.962	.518
ACONF1	311	4.99	1.317	-.530	-.275
ACONF2	309	3.53	1.706	.526	-.823
ACONF3	307	4.79	1.607	-.531	-.447
ACONN1	311	3.19	1.639	.529	-.794
ACONN2	308	3.64	1.744	.429	-.800
ACONN3	309	3.41	1.725	.396	-.947
ACONT1	314	5.25	1.391	-1.066	1.002
ACONT2	311	5.37	1.448	-1.191	1.032
ACONT3	312	4.02	1.818	-.061	-1.228
AINTER1	308	2.81	1.493	.804	.123
AINTER2	313	2.95	1.536	.652	-.334
AINTER3	310	3.13	1.580	.538	-.564
ADISC1	310	3.70	1.769	.337	-1.076
ADISC2	308	3.09	1.728	.851	-.244
ADISC3	310	3.37	1.796	.517	-.834
ABLOCK1	309	4.63	1.981	-.426	-1.151
ABLOCK2	309	4.74	1.959	-.401	-1.143
ABLOCK3	310	4.51	1.823	-.246	-1.078
ADIS1	315	4.04	1.941	.048	-1.325
ADIS2	309	3.91	1.897	.187	-1.341
ADIS3	314	3.94	1.754	-.031	-1.049
Valid N (listwise)	247				